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THE
Floriſt's Directory;
OR
A TREATISE ON THE
CULTURE OF FLOWERS;
to which is added
A SUPPLEMENTARY DISSERTATION
ON
SOILS, MANURES, &c.
BY
James Maddock
Floriſt, *at WALWORTH, near* **London.**

Mira quædam in colendis floribus
suavitas et delectatio. Cic.

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PREFACE.

THE following Treatiſe was undertaken by the Author at the particular requeſt of many reſpectable Floriſts, who have ſuffered repeated loſſes, and have been diſcouraged in their favourite purſuit of cultivating the finer flowers; as well as of others, who have been deterred from entering with ſpirit into this moſt rational and pleaſing amuſement, for want of a ſuitable guide, or director, to inſtruct them in the rudiments of the art; pointing out, on the one hand, the moſt approved methods of culture yet diſcovered, and, on the other, guarding them againſt the pernicious conſequences ariſing from improper modes of treatment.

The Author, with much diffidence, ſubmits the following pages to the peruſal of ſuch; and at the ſame time earneſtly ſolicits the candour and indulgence of the reader, in excuſing any inaccuracies they may be found to contain, as his object, in the publication, is to afford what little aſſiſtance he is capable of, to the inexperienced, without arrogating to himſelf any ſuperior qualifications for a work of this nature, beyond others who perhaps may be more capable of executing it; but who, however, have not yet thought proper to favour the public with their opinions and experience on the ſubject.

The Author is not acquainted with any publication that treats ſeparately, and particularly, of thoſe flowers that are deemed moſt worthy of cultivation by Floriſts; there are, indeed, treatiſes on the culture of particular flowers, as of the Hyacinth, Auricula, &c. ſome of which are written in foreign languages, and are conſequently of but little uſe to the Engliſh reader; others are to be found in our own tongue, by different authors; but their works are either voluminous and expenſive, or their information inadequate to the end propoſed.

However imperfect, in point of ſcience or language, the following work may appear, it has, at leaſt, the advantage of experience to recommend it, an experience founded on long and extenſive practice, and cloſe attention to the ſubject; and the ſucceſs reſulting from the methods hereafter deſcribed has been, in ſome meaſure, confirmed by the concurrent teſtimonies of the moſt eminent Floriſts, both of this country and abroad.

But notwithſtanding the long and continued attention which ſeveral in England and Holland have given to this branch of horticulture, the art of cultivating plants in general, and flowers in particular, is yet ſo imperfectly underſtood, and may probably long remain to be ſo, that an extenſive field for improvement and diſcovery preſents itſelf to the intelligent and exploring genius, who is, or may be engaged in this purſuit.

So much likewiſe depends on ſoil, ſituation, climate, and various other attending circumſtances, that an individual can ſcarcely expect to arrive at any conſiderable degree of perfection in this art, merely from his own obſervation and experience; it is, perhaps, not to be obtained in any other manner than by a compariſon of the ſucceſs which may reſult from the methods and practice of different perſons reſiding in ſituations totally diſſimilar to each other: if ſuch would mutually communicate their ideas, it would evidently tend to elucidate a ſubject very intereſting to the admirers of this claſs of the productions of nature; for want of ſuch communications, many uſeful acquiſitions and diſcoveries have been loſt to ſociety, either by ſinking into oblivion, with the parties in whom they originated, or by being improperly circumſcribed within too narrow limits, have fallen ſhort of thoſe extenſive improvements which they were capable of producing.

It is impoſſible to lay down any rules on the preſent ſubject that will always ſucceed when reduced to practice; they will, on the contrary, be liable to fail under peculiar circumſtances, ſuch as the irregularities of weather, difference of ſeaſons, the long duration and extremes of heat and cold, and other unavoidable caſualties, which are beyond the reach of human prudence to foreſee, or guard againſt at all times; all that can be reaſonably expected or propoſed here, is, to point out ſuch modes of treatment as have been generally found to ſucceed beſt, without preſuming to ſay that any of the rules are infallible, or incapable of improvement.

INTRODUCTION.

THE finer Flowers, more particularly demanding our attention, are

The Hyacinth,
The Tulip,
The Ranunculus,
The Anemone,
The Auricula,
The Carnation,
The Pink, and
The Polyanthus.

Theſe are ſeparately treated of under their reſpective heads; but for a more particular deſcription of the ſeveral varieties of each ſpecies, the reader is referred to the printed Catalogue publiſhed annually by the Author of this Treatiſe, containing the name, colour, and price, of the various articles, which could not be properly introduced into any permanent work of this kind, on account of the continual changes and alterations that take place, both in the value of the articles, which is governed by their novelty, ſcarcity, or merit, and alſo by the introduction of new ſorts, and extinction of others.

The following ſhort account, or hiſtory, of the cultivation of Flowers, may not be deemed foreign to our purpoſe; but to trace back to their origin, the Flowers treated of in the following work, through their various ſtages of cultivation and improvement, and to aſſert with abſolute certainty, of what particular country they are natives, would be a taſk too difficult to accompliſh, and the reſult of the moſt aſſiduous inquiry, would, in all probability, in the end amount to little more than conjecture; ſo divided are authors in their opinions on the ſubject, and ſo enveloped in obſcurity are the ideas of ancient writers, particularly with reſpect to the Hyacinth, that inſtead of communicating any uſeful information, they tend rather to confound and bewilder the inquirer.

It muſt therefore ſuffice, juſt to point out the moſt natural and reaſonable concluſions on this head, and ſimply to ſtate what are the moſt generally received opinions of latter times on the ſubject; in doing which it would be improper to extend the diſcuſſion beyond the narrow limits to which a ſtrict attention to authenticity will neceſſarily confine it.

The Hyacinth is of the claſs and order Hexandria Monogynia; according to Linnæus, it is the Hyacinthus orientalis; ſive, Hyacinthus corollis infundibuliformibus ſemiſexfidis, baſi ventricoſis: *i. e.* Oriental Hyacinth; or Hyacinth with funnel ſhaped corols or petals, cleft half way into ſix parts, and ſwelled at the baſe. The Oriental Hyacinth, according to Linnæus, is a native of Aſia and Africa; it is alſo called oriental by Dioſcorides, who wrote during, or ſoon after, the reign of Veſpaſian: Caſpar Bauhine refers to a work entitled Beſler's Hortus Eyſtettenſis, the firſt part of which was publiſhed in 1613, the laſt in 1640, for three double varieties of the Oriental Hyacinth; but the firſt double Hyacinth known in Holland, was raiſed from ſeed, towards the end of the laſt, or beginning of the preſent century, by

Peter Voorhelm,[a] one of the earlieſt and moſt celebrated Dutch Floriſts, and from which, all the fine double varieties we now poſſeſs, may be traced through a courſe of continued cultivation and gradual improvement.

So great was the value of a capital new double Hyacinth conſidered formerly in Holland, that two thouſand Dutch florins, amounting to upwards of 150l. ſterling, was actually given for a ſingle root.[b] The word Hyacinth is of very ancient date, and of uncertain derivation.

The Tulip is of the ſame claſs and order as the Hyacinth; according to Linnæus, it is the Tulipa Geſneriana; ſive, Tulipa flore erecto, foliis ovato-lanceolatis: *i. e.* Geſnerian Tulip; or

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[a] Vide the Marquis de St. Simon's treatiſe on the Hyacinth, printed at Amſterdam, 1768.

[b] Vide George Voorhelm's treatiſe on the Hyacinth, printed at Haerlem, 1773.

Tulip with an erect Flower, and ovate ſpear-ſhaped Leaves. The Tulip, according to Geſner, is a native of Cappadocia, from whence it was introduced into Europe, in the year 1559; it is, however, certain, that the preſent improved varieties of the Tulip have been obtained by art, within the laſt and preſent century; and it is chiefly to the exertions of Dutch, French, and Flemiſh Floriſts, that we are indebted, for the perfection to which we ſee the Tulip at preſent arrived.

The rage for Tulips was ſo prevalent in Holland about one hundred and fifty years ago, that it is ſaid, property to the amount of many hundred pounds ſterling, was given for a ſingle root; this extraordinary traffic was, however, ſoon checked by the interference of the legiſlature, who foreſaw the ruinous conſequences that muſt inevitably follow an infatuation of that kind to individuals, and deemed it expedient to enact, that no Tulip, or other flower root, ſhould, in future, be ſold for any ſum exceeding about fifty pounds ſterling. The word Tulip is ſaid to be derived from the Turkiſh word, Tulipan, ſignifying a cap, or head dreſs.

The Ranunculus is of the claſs and order Polyandria Polygynia; according to Linnæus, it is the Ranunculus Aſiaticus; ſive, Ranunculus foliis ternatis biternatiſque, foliolis trifidis inciſis, caule inferne ramoſo: *i. e.* Aſiatic Ranunculus; or Ranunculus with trifoliate, and twice trifoliate leaves, whoſe leaflets are trifid and cut, the ſtem branching at the bottom.

The Aſiatic, or as it is more commonly called, the Perſian Ranunculus, according to Linnæus, is a native of Aſia and Mauritania; it is ſaid to have been introduced into Europe from Syria, at the time of the Cruſades; but in this, as well as other Flowers, we find the moſt conſiderable improvements made within the laſt fifty years, both on the continent of Europe, and in England. The word Ranunculus is ſuppoſed to be derived from Rana, a Frog; this derivation probably originated from the known partiality of the Ranunculus to a cool and moiſt ſituation, while in a ſtate of vegetation, as the plant does not appear to have any reſemblance in its ſhape to that animal.

The Anemone is of the ſame claſs and order as the Ranunculus; according to Linnæus, it is the Anemone coronaria; ſive, Anemone foliis radicalibus ternato decompoſitis, involucro folioſo: *i. e.* Crown Anemone; or Anemone with radical Leaves three-decompound, and a leafy involucrum.

The Anemone, according to Linnæus, is a native of the ſouth-eaſt of Europe; but we are alſo informed by another author,[c] that M. Bachelier, a French gentleman, brought it from America to France, in the courſe of the laſt century, where he cultivated and very much improved the ſpecies, ſince which it has attained its preſent degree of perfection, by the continued attention of Floriſts to its culture: the Engliſh, however, can claim little or no ſhare in the advancement or improvement of this flower; for all the varieties of double Anemonies we poſſeſs in England, have been imported from Holland, France, or Flanders. The word Anemone is derived from a Greek word, ſignifying the Wind, very applicable to this flower, as its petals are ſo ſoft and flexible, and its ſeed ſo light and downy, that they are agitated by the moſt trifling breezes.

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[c] Vide G. Voorhelm's treatiſe on the Hyacinth.

The Auricula is of the claſs and order Pentandria Monogynia; according to Linnæus, it is the Auricula Urſi; ſive, Primula foliis ſeratio glabris: *i. e.* Bear's Ear; or Auricula with ſmooth ſerrated leaves.

The Auricula, according to Linnæus, is a native of the alps of Switzerland and Styria; it is called Sanicula Alpina, by Bauhine, Geſner, &c. it owes its preſent improved ſtate, principally to the aſſiduity and attention of Engliſh Floriſts to its culture, who have, from the ſeed of a flower, imported from Holland about fifty years ſince, produced, by continued cultivation, almoſt all the varieties we now can boaſt. The Dutch and French have extended their improvement of this flower, little or no further than to produce a numerous variety of yellow, brown, and

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and other ſhaded ſorts, greatly inferior to the beautiful kinds raiſed in this country.

The words Auricula Urſi, ſignify Bear's Ear; the plant is ſo called from the reſemblance its leaves have to the ears of that animal.

The Carnation is of the claſs and order Decandria Digynia; according to Linnæus, it is the Dianthus Caryophyllus; five, Dianthus floribus ſolitariis, ſquamis calycinis ſubovatis breviſſimo, corollis, crenatis: *i. e.* Clove Dianthus; or Dianthus with ſolitary flowers; ſcales to the calyx rather oval and very ſhort; the petals crenated or notched.

The Carnation, according to Linnæus, is a native of Italy; the ſingle Clove Carnation is, however, to be found growing wild on the walls of Rocheſter Caſtle; but whether, from that circumſtance, it ought to be deemed a native of this country, we pretend not to determine; it ſeems rather a diſputable point, and therefore, after having related the ſimple fact, we leave the diſcuſſion to thoſe who may be able to decide upon it with more certainty.

The Carnation has attained its preſent degree of perfection, by the unremitting attention of Floriſts to its culture from ſeed, the only line in which the ſpecies of any plant, or flower, can poſſibly receive improvement or variety.

The principal, or moſt generally eſteemed, ſorts of Carnations, cultivated in England, till within the laſt fifty years, were called Burſters, becauſe their bloſſoms[d] conſiſted of a double pod;[e] the interior one being in the centre of the other, and containing likewiſe a great number of petals, by its ſwelling cauſed the

[d] Corolla.

[e] Calyx.

the exterior pod, or calyx, to burſt; the bloſſoms of theſe Burſters, when properly managed, and in full bloom, were not leſs than four or five inches in diameter, and the centre of each was well filled up with the petals of the interior pod, ſo as to make a very uniform and noble appearance; but it required much care and ſkill to cauſe them to blow in perfection.

The attention of the Floriſt was diverted from the cultivation of Burſters, by the introduction of a new deſcription of Carnations from France, about fifty years ſince; theſe were denominated Whole-Blowers, in oppoſition to the former term of Burſters; they were alſo called French Flakes; their bloſſoms, in general, were furniſhed with only one pod or calyx, which, by a little management on the approach of bloom, was preſerved in an entire ſtate; the culture of them was, at the ſame time, attended with much leſs trouble, in other reſpects, than that of the former, and they ſoon obtained a decided preference.

But the improvement, with reſpect to the edge of the petal, is of ſtill later date; the firſt ſorts, both of Burſters and Whole-Blowers, being poſſeſſed of a fringe, or ſerrature, in that part, like that of the Pink; this has, however, been completely overcome of late years, and thoſe poſſeſſed of that property, are not now eſteemed to be of the capital ſorts.

The word Carnation is, probably, derived from Carnes, the natural fleſh colour.

The Pink is of the ſame claſs and order as the Carnation; according to Linnæus, it is the Dianthus Arenarius; ſive, Dianthus caulibus ſubunifloris, ſquamis calycinis ovatis obtuſis, corollis multifidis, foliis linearibus; *i. e.* Sand Dianthus; or, Dianthus with moſtly one flower on the ſtem, oval obtuſe ſcales to the calyx, the petals cut into many points, and the leaves linear or narrow.

This Pink, according to Linnæus, is a native of the colder parts of Europe; it is alſo found in the north of England; but the improved varieties of what were formerly called Pheaſant Eyes, are the ſubject of that part of the following work where Pinks are treated of, having now the preference in this and other countries; theſe ſo materially differ, in ſome of their properties, from the original ſpecies, that it is not eaſy to aſcertain to which of them, as deſcribed by Linnæus, they moſt properly belong; there is, however, reaſon to believe, that the arenarius of Linnæus, is the original Pheaſant Eye, and as ſuch it is given in this place.

The great improvements made in the Pink, are of very recent date, and hitherto chiefly, if not wholly, confined to this kingdom; in ſhort, we may venture to aſſert, that a Pink called Major's Lady Stoverdale, raiſed from ſeed in the ſouthern parts of England, by the perſon whoſe name it bears, was the firſt that deſerved to be claſſed amongſt ſuch as are now held in eſteem by Floriſts; it was raiſed about twenty years ſince, and was the firſt Pink poſſeſſed of that ſingular and beautiful ornament called a Lacing, which is a continuation of the colour of the eye, round the white or broad part of the petal, that gives it a moſt elegant appearance.

Very little progreſs has yet been made towards diveſting the Pink of its fringed or ſerrated edge; but that effect having been produced in the Carnation, we may reaſonably hope, that it will in time take place in the Pink, and that we ſhall be able to obtain tall ſtrong ſtem'd Pinks, with large handſome bloſſoms, conſiſting of petals as perfectly entire on the edge as thoſe of the Carnation or the Roſe.

The word Pink is derived from the Dutch, in which language it ſignifies an Eye.

The Polyanthus is of the ſame claſs and order as the Auricula, and has been conſidered, by different authors, to have originated from different ſpecies of the Primula; ſome ſuppoſe the Cowſlip, others the Oxſlip; but the author of the Flora Londinenſis, treating of the Primroſe, conſiders it as the original parent of the Polyanthus, to whom we refer the reader for his reaſons, which he gives at large in that excellent publication.

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It is aſſerted, however, by ſome, that the Polyanthus is a native of Turkey, where it may ſtill be found in great beauty, &c.[f] To whatever plant it owes its origin, its preſent highly improved ſtate is doubtleſs the effect of long and aſſiduous culture, which, like the Auricula, Carnation, and Pink, has been chiefly confined to this country. The beautiful yellow of the Cowſlip, which it did not formerly poſſeſs in the ſame degree of perfection it now does, has, in the opinion of ſome, been communicated to it, within the preſent century, by impregnation; it has likewiſe received very conſiderable improvement in its other properties, within the laſt twenty or thirty years; and the ſorts known fifty years ago are not now in cultivation, being neglected in proportion to the ſucceſſive acquiſition of new and ſuperior varieties.

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[f] Vide Hanbury's Complete Body of Planting and Gardening, printed at London, 1771 and 1772.

The word Polyanthus, or Polyanthos, is derived from the Greek, and implies many flowers.

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It may not be improper to give ſome explanation to ſuch of the botanical terms, deſcriptive of the component parts of a flower, as are occaſionally mentioned in the following treatiſe; but it does not appear neceſſary to explain every technical term uſed by Botaniſts, in their deſcriptions of the conſtituent parts of a plant or flower, in this work, as it is not intended to comprize a ſyſtem of Botany.

Botanical Terms explained, *viz.*

I. The Peduncle, is the foot-ſtalk of a flower, proceeding from the main ſtem, and ſupporting the Corolla, as in the Auricula, Polyanthus, &c.

II. The Calyx, or flower cup, the part which guards and ſupports the Corolla, as in the Carnation, Pink, &c.

III. The Corolla, the flower or bloſſom, properly ſo called, conſiſting of one or more petals. When this is entire, it is called Monopetalous, or a Corolla of one petal, as in the Auricula and Polyanthus; but when it is divided quite to the baſe, into two or more parts, each part is called a Petal; thus the Tulip is ſaid to have ſix petals: in double flowers they are extremely numerous, and the Corolla of ſuch may be termed Polypetalous.

IV. The Petal, or ſingle floral leaf.

V. The Unguis, or lower, long, narrow part of a petal, called the Baſe, or Claw.

VI. The Lamina, or upper, broad, ſpreading part of a petal, called the Plate.

VII. The Limb, border, or upper broad, ſpreading part of a Monopetalous Corolla.

VIII. The Tube, or lower, narrow, tubular part of the ſame.

IX. The Stamen, Stamens, or Stamina, if more than one, conſiſts of two parts, *viz.* the Filament, and the Anther, or Summit, which it ſupports.

X. The Anther, contains the Pollen, or Farina.

XI. The Pericarpium, or Seed-Veſſel.

XII. Radix, the Root: vide Plate 4. and its page of reference, for various deſcriptions of flower roots.

THE
FLORIST'S DIRECTORY.

ON HYACINTHS.

DOUBLE Hyacinths, which are much more beautiful and eſtimable than thoſe which produce ſingle flowers, are, like the latter, known by the general diſtinction of Reds, Whites, and Blues, with a few kinds of Yellow, more recently obtained from ſeed. In many inſtances, Double Hyacinths have the peculiar advantage of a beautiful contraſt of colour in the eye, or centre of their bells, which the ſingle ſorts cannot poſſeſs.

The roots[a] of Double Hyacinths may be planted at any time from the middle of October to the middle of November; if it is done earlier the plants will appear above ground in the middle of winter, which will render them liable to material injury from ſevere froſts; or if it is deferred later, the roots will be weakened by their natural tendency to vegetate, manifeſted by a ſwelling of the circle from whence the fibres proceed, which will be ſoon followed by an actual appearance of the points of the fibres, together with that of the foliage at the other extremity of the root, in the form of a ſmall obtuſe cone of a greeniſh colour.

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[a] Or bulbs.

The bed on which they are to be planted ſhould be ſituated in rather a dry and airy part of the garden, a ſouthern aſpect is to be prefered, ſheltered on the North and Eaſt by trees or buildings, at a diſtance from it proportionable to their height; if it is a common garden wall or hedge, the diſtance of ſix feet will be ſufficient. Care muſt however be taken to avoid the drip from trees, which is found to be prejudicial.

When the ſituation is determined on, the dimenſions of the bed ſhould be marked out, and the ſoil entirely taken away to the depth of at leaſt two feet; the earth in the bottom muſt then be dug up and comminuted, or pulverized, one ſpit or nine inches deeper, and the ſpace above filled up with a compoſt conſiſting of the following ingredients in the annexed proportions, viz.

One third coarſe ſea, or river ſand.
One third freſh ſound earth.
One fourth rotten cow-dung, at leaſt two years old.
Earth of decayed leaves for the remainder.

The freſh ſound earth of the compoſt ſhould be of the beſt quality that the garden or adjacent country produces; it ſhould be entirely free from noxious vermin of every deſcription, particularly the hard yellow wire-worm, which is about an inch long, and prevails in moſt parts of the kingdom; it is extremely deſtructive to all kinds of tender vegetables, and many of the hardy ſorts, by penetrating to, and eating out the heart of the bulb, and it ſometimes proceeds up the ſtem of the plant. The only ſure method of avoiding theſe worms is to examine the ſoil very minutely, and if it contains any, to pick them out and deſtroy them. Some make uſe of rotten tan as an ingredient in the compoſt, but it generally retains ſome degree of aſtringency, which is pernicious to delicate flowers.

The ingredients before mentioned are to be well mixed and incorporated, and about a fortnight previous to planting, the bed ſhould be filled up with the compoſt to about four inches above the level of the path on the ſouth or front ſide, and ten inches on the north ſide, ſo as to form a regular ſlope, or inclination towards the ſun.

On planting the roots, the ſurface of the bed ſhould be covered with a little freſh ſandy earth about one inch thick, raked perfectly ſmooth and even, and have the exact ſituation for every bulb marked upon it, as on Plate 5. Fig. 1.

The plan, as deſcribed by the plate, on minute inveſtigation, will appear ſuperior to any other that can be deviſed for elegance and ſimplicity; each bulb, thoſe of the outſide rows excepted, will be in the centre of a hexagon, and the whole at equal diſtances from each other. The width of the ſurface of the bed is four feet, the ſix rows acroſs it are eight inches aſunder, and the two outſide rows are each four inches from the ſides of the bed; conſequently the ſpace between the centre of each bulb is about nine inches and a quarter; each row contains three bulbs, and the letters R. W. B. denote the colour of the flower to be placed there, viz. Red, White, or Blue; under theſe three heads all Hyacinths may be comprehended, except a few ſorts of Yellow, which may be claſſed with the Whites.

On planting Hyacinths, a little clean ſand ſhould be placed underneath, and likewiſe upon the roots, to prevent the earth adhering too cloſe to them; the whole are then to be covered with ſound freſh ſandy earth, from three to four inches deep, according to the ſize of the bulb; when this is completed, the bed will be about eight inches above the level of the walk on the ſouth or front ſide, and about fourteen inches on the north ſide; it will look neater and have a better effect if it is ſupported on all ſides with a ſtrong frame of thick boards, or brickwork; and in order to preſerve it from very heavy rains or ſevere froſts, it ſhould be hooped over, and mats or canvaſs ſhould be placed at hand ready to cover the bed on ſuch emergencies; but it will not be neceſſary to defend it from moderate rains or ſlight froſts: for too frequent and long covering will deprive the roots of the due action and influence of the air, which ought to be avoided as much as poſſible: it were even better to run the hazard of incurring a ſlight injury by the omiſſion of covering on ſome occaſions, than overdo it to the certain detriment of the plants.

If froſt is permitted to penetrate ſo far into the ſoil as to reach the bulbs, eſpecially about the time that the plants begin to appear above ground, it will produce a ſingular effect, by cauſing ſome of them to ſhoot forth or diſcharge their ſtems and bloſſoms; but if the roots become entirely frozen through, they are in danger of being deſtroyed.

The earlier ſorts will begin to open and ſhew colour about the beginning of April; it will be proper to ſcreen ſuch from the too powerful effects of the ſun, which, if not prevented, would bleach and tarniſh their colours, particularly the Reds and deep Blues; but if they are properly defended from it, their colours will be preſerved, and they will, in ſome meaſure, be kept back, ſo as to be in full bloom with the later ſorts, eſpecially if the roots of the early ſorts have been planted about an inch deeper than the reſt: it is a very deſirable object to have an uniform bloom.

It will be neceſſary to ſupport the ſtems, as they advance in height; for this purpoſe, ſmall ſticks or wires, painted green, ſhould be forced into the ground, immediately behind the bulbs, either in an erect poſition, or leaning a little backwards, to which the ſtems are to be rather looſely tied, with ſmall pieces of green worſted, as ſoon as they begin to bend, or are in danger of breaking with the weight of the bells;[a] this operation muſt be repeated as they advance in height, for it is impoſſible to do it at one time ſo as to anſwer the purpoſe. When the greater part of the bed appears in colour, a covering, or awning, ſhould be erected over it, and the path in front: the awning ſhould conſiſt of a ſtrong frame of wood, ten feet high in the centre, and ſeven feet at the ſides, covered with Iriſh or Scotch ſheeting, or Ruſſia Duck, which will effectually keep out rain, and admit a great degree of light; it ſhould come down cloſe to the bed, on the north ſide, in order to preſerve it from cold winds, which are prejudicial to the bloom.

The covering ſhould be ſo conſtructed, by means of lines and pullies, as to be eaſily and expeditiouſly rolled up, or let down, as occaſion requires, ſee Plate 5, Fig. 2, to afford the plants the full benefit of light and air, at all favourable opportunities; that is to ſay, when the air is mild, and light clouds intervene, ſo as to blunt the ſun's ray. This ſometimes, and, indeed, often happens to be the caſe from ſeven to nine o'clock in the morning, and from four to ſix in the evening, at which times the ſun has alſo leſs power than in the middle of the day.

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[a] The Floriſts uſual term for the Corolla of the Hyacinth.

A bed of Hyacinths never requires to be watered at any period; the rains that happen after planting are generally more than ſufficient, both for the roots and the bloom; and after the bloom is over they are rather prejudicial than otherwiſe, except when very moderate.

Although covering in the manner deſcribed, preſents and exhibits the bloom to the greateſt advantage, yet it evidently has a tendency to weaken and injure the bulbs, and ought not, therefore, to be continued more than two or three weeks at moſt; but as ſoon as the general bloom declines, the bed ſhould be immediately expoſed to the open air, and the mats and hoops ſhould be replaced, as before, to keep off heavy rains.

It is the practice in Holland to take up the bulbs about three weeks or a month after bloom, in the following manner: as ſoon as the plants begin to put on a yellowiſh decayed appearance, they take up the roots and cut off the ſtem and foliage cloſe to, or within half an inch of the bulb, but leave the fibres, &c. attached to it; they then place the bulbs again on the ſame bed ſideways, with their points towards the North, and cover them about half an inch deep, with dry earth or ſand, in the form of a ridge, or little cone, over each: in this ſtate they remain about three weeks longer, and dry or ripen gradually; during which, as much air is admitted as poſſible, but the bed is preſerved from heavy rains, and too hot a ſun; at the expiration of this period, the bulbs are taken up, and their fibres, which are become nearly dry, gently rubbed off; they are then placed in a dry room for a few days, and are afterwards cleaned from any ſoil that adheres to them, their looſe ſkins taken off, with ſuch offsets as may be eaſily ſeparated.

When this dreſſing is finiſhed, the bulbs are wrapped up in ſeparate pieces of paper, or buried in dry ſand, where they remain till the return of the ſeaſon for planting.

Another, and leſs troubleſome, mode of treatment after bloom, though perhaps more hazardous, is to keep the bed airy, and rather dry, till the ſtems and foliage appear nearly dried up or conſumed; this will ſeldom happen to be the caſe in leſs than two months; the bulbs are then to be taken up, cleaned from the fibres, ſoil, &c. and preſerved in ſand or papers as before directed.

Offsets may be planted a few days earlier than the large roots, in an open part of the garden, in rows about two inches deep, upon a bed raiſed ſix or eight inches above the common level, conſiſting of a ſandy ſoil, comminuted, or pulverized, eighteen inches deep; the ſurface of the bed ſhould be made rather convex, or rounding, ſo as to throw off heavy rains; no further attention is neceſſary, except to ſtir the ſurface of the bed occaſionally, keep it free from weeds, and preſerve it from very ſevere froſt. The proper time to take them up, &c. is already pointed out, being the ſame as for large roots.

Offsets, if preſerved in health, will bloom weakly the ſecond year; but by the third, tolerably ſtrong, and may afterwards be placed on the beſt bed.

Such roots as have attained the age of four or five years, bloom ſtronger in this country than any other; they afterwards gradually decline, either by dividing into offsets, or diminiſhing in ſize and ſtrength: but in Holland, owing to the peculiar circumſtances of the ſoil, climate, ſituation, &c. the ſame bulb has been known to produce bloom twelve or thirteen times, nor is it ever known to die merely with age.

Hyacinths are ſubject to various diſeaſes, ariſing from different cauſes; that diſtemper commonly known by the appellation of the ring ſickneſs, is of all others the moſt dangerous, and moſt difficult to cure; in ſhort, the only effectual remedy is to cut out the diſeaſed part, till no brownneſs, yellowneſs, or other ſymptom of diſtemper remains. The ſound part will ſurvive the operation, if it conſiſts of no more than the outſide tunick of the bulb, without any heart; but it will, in ſuch caſe, only be able to produce offsets, and will never recover itſelf, ſo as to flower again: as ſoon as the operation is performed, the wounded part ſhould be expoſed to the ſun, till it becomes dry, to prevent mouldineſs, and it will be beſt to replant it in ſome dry ſituation ſoon after.

The Hyacinth delights in a ſandy ſoil, and ſaline atmoſphere; of conſequence it ſucceeds beſt on the ſea coaſt, or in ſituations very near to the ſea. In more inland parts, it will generally be found neceſſary to procure an annual reinforcement of freſh imported bulbs, in order to make good or ſupply the deficiencies ariſing from the loſs, or impaired health and ſtrength of many of thoſe that have bloomed on the beſt bed the preceding ſpring. Thoſe who are well acquainted with the Hyacinth, always allow about one bulb in twelve to fail, notwithſtanding no viſible blemiſh or decay is diſcernible at the time of planting; ſuch generally have a *corps de reſerve*, in narrow deep pots, which, at the commencement of bloom, they plunge or ſink into the bed, wherever a vacancy, or weak ſickly plant makes its appearance; by which means the uniformity and regularity of the bed is preſerved, without any viſible defect or alteration.

Single Hyacinths are held in leſs eſtimation than full or double ones; their colours are, however, equally good if not ſuperior, and their bells, though ſmall, are more numerous; they are more hardy, and may be planted a week or two before the double ſorts, by which means they will bloom two or three weeks earlier than the latter, with the ſame kind of management.

The Whites and Blues amongſt theſe ſingle ſorts are poſſeſſed of better properties than the Reds; it is therefore adviſable to have a greater proportion of them in a collection.

Single Hyacinths produce ſeed, which is very rarely to be procured from double ſorts, and the following is the moſt approved method of raiſing and cultivating it; but it is ſcarcely worth attempting in this country, as its progreſs is ſo ſlow, and ſucceſs in ultimately obtaining any valuable flowers from it, is ſo extremely precarious.

The ſeed ſhould be ſaved from ſuch ſorts as have ſtrong and ſtraight ſtems, and a regular well-formed pyramid of bells, not perfectly ſingle, but rather ſemi-double. It ſhould not be gathered till it has become perfectly black and ripe, at which time the Pericarpium will appear yellow on the outſide, and will begin to open. The ſtem, with which the ſeed is connected, is then to be cut off, and placed in a dry, airy, cool ſituation, where it may remain undiſturbed till the time of ſowing, which is the latter end of October, or beginning of March: it ſhould then be ſown about half an inch below the ſurface of the ſoil, in a deep box filled with good ſound garden mould mixed with ſand, or the Hyacinth compoſt, which ſhould be afterwards placed in a warm ſituation during winter. It will never require to be watered, or have any other attention paid to it, than to keep it free from weeds and froſt, till it has remained in this ſtate two years; it muſt then, on the approach of winter, have an additional ſtratum of the compoſt placed upon it, about half an inch thick; and at the third year, in the month of July, the roots may be taken up, dried, and treated in the ſame manner as deſcribed for large bulbs or offsets; ſome of the roots will flower the fourth year, one half of them will at the fifth, but by the ſixth year, every healthy root will exhibit its bloom, and then the hopes and expectations of the cultivator will be realized or diſappointed. He may think himſelf fortunate, if one half of the plants that firſt appeared, are in exiſtence at this period; and if he can at laſt find one flower in five hundred deſerving a name or place in a curious collection, he may reſt perfectly content, and be aſſured that he has fared as well as could reaſonably be expected, and better than many who have beſtowed equal attention on the ſubject.

A Deſcription of the Properties of a Fine DOUBLE HYACINTH.

THE ſtem ſhould be ſtrong, tall, and erect, ſupporting numerous large bells, each ſuſpended by a ſhort and ſtrong Peduncle, or foot-ſtalk, in a horizontal poſition, ſo that the whole may have a compact pyramidal form, with the crown, or uppermoſt bell, perfectly erect.

The bells ſhould be large, and perfectly double, *i. e.* well filled with broad bold Petals, appearing to the eye rather convex, than flat or hollow: they ſhould occupy about one half the length of the ſtem.

The colours ſhould be clear and bright, whether plain red, white, or blue, or variouſly intermixed and diverſified in the eye; the latter, it muſt be confeſſed, gives additional luſtre and elegance to this beautiful flower.

Note. Strong bright colours are, in general, preferred to ſuch as are pale; there are, however, many roſe-coloured, pure white, and light blue Hyacinths, in high eſtimation.

Obſervation. Some ſorts conſiſt of Petals of different colours, ſuch as light reds, with deep red eyes; whites, with roſy, blue, purple, or yellow eyes; light blues, with deep blue or purple eyes; and yellow, with purple in the eye, &c. others again have their petals ſtriped, or marked down the centre, with a paler or deeper colour, which has a pleaſing effect.

It ſometimes happens, and with ſome ſorts more frequently than others, that two ſtems are produced from the ſame root, one is generally conſiderably taller and ſtronger than the other; when this is the caſe, the weaker may be cut off near the ground, ſoon after it makes its appearance, or ſuffered to bloom, and its bells be intermixed with the lower ones of the taller ſtem, ſo dextrouſly as to appear like one regular pyramid of bells.

* * *

ON TULIPS.

TULIPS are divided into two claſſes, *viz.* early and late blowers.

The late blowers are infinitely the fineſt and moſt valuable, and are of courſe entitled to the principal attention of the curious; they are, therefore, to be conſidered as the ſubject of the following remarks and obſervations.

They are divided into five[c] diſtinct families, *viz.*

1. Primo Baguets.
2. Baguet Rigauts.
3. Incomparable Verports.
4. Bybloemens.
5. Bizards.

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[c] The author has not been able to diſcover the original or literal ſignification of theſe terms: nor does he apprehend they are any other than trivial terms of diſtinction, uſed by Dutch Floriſts. The Incomparable Verports are a particular kind of Bybloemen, diſtinct from the reſt.

The firſt four have white bottoms or grounds, and the Bizards have yellow grounds.

The moſt proper time to plant Tulip Roots is from the end of October to the 10th of November, which is indeed pointed out by nature, in the appearance of the graſs[d] at the upper end of the root, as is before obſerved of Hyacinths.

The ſituation for the beſt bed ſhould be in an open airy part of the garden; when that is fixed upon, the ground ſhould be marked out, agreeable to its intended dimenſions, and the ſoil taken out twenty inches deep; the bottom is then to be filled up with ſound freſh earth, ten inches thick, upon which is to be placed a ſtratum of two year old rotten cow-dung, and earth of the above deſcription, about one half of each, well mixed together, twelve inches thick; and again, upon this is to be placed another ſtratum of the ſame kind of earth as that of the bottom; this is only to be two inches thick at the ſides, and three inches at the middle, which will give it a ſmall degree of convexity; this is to be performed about the 20th of October, *i. e.* a week or two before planting, to give the bed time to ſettle; at the expiration of two weeks the earth will have ſubſided, ſo as to be about two inches higher than the circumjacent paths; but if heavy rains intervene between this preparation of the bed, and the time of planting, it will be proper to keep them off, in order to preſerve the temperature of the earth, as it would be rendered too compact and adheſive, by a redundancy of moiſture, for the fibres to paſs freely through it, which ought to be avoided.

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[d] Or Foliage.

On the day made choice of for planting, rake the ſurface of the bed ſmooth and even, ſtill preſerving its convexity, and mark the exact ſituation for every root upon it. The proper diſtance between each root, is ſeven inches from centre to centre; and if the rows are ſeven inches aſunder, the roots will form ſquares, of ſimilar diameter, on all parts of the bed.

A bed conſiſting of ſeven rows, makes the nobleſt appearance, when it is of ſufficient length, with a path round it, about two and a half or three feet wide; but where the number of roots is ſmall, five rows may ſuffice, and the path, in that caſe, may either extend quite round the bed, or only on one ſide, at pleaſure.

If, therefore, the bed conſiſts of ſeven rows, it ſhould conſequently be fifty inches wide, which will allow a ſpace of four inches between the outſide rows and the ſides of the bed; but if the bed contains only five rows, it will only require to be three feet wide, to give the roots ſimilar diſtances.

Having ſprinkled a little clean ſand where the roots are to be ſet, place them with great exactneſs, and add ſome very ſandy earth, ſo as to completely envelope each root in a little cone of it; then cover the whole very carefully, with ſtrong, ſound, freſh loam, about four inches thick at the middle of the bed, gradually decreaſing as it approaches the ſides, where it ſhould be about three inches thick; thus will the convexity of the ſurface be increaſed in a proper degree, and the roots will be covered with ſoil, to a depth proportionate to their ſize and ſtrength: the largeſt and ſtrongeſt having been placed in the centre rows, and the ſmaller and weaker on thoſe of the outſide. No Tulip root, whatever may be its ſize or ſtrength, ſhould be planted more than four inches deep from the upper ſide of the root; nor ſhould any blooming root be planted leſs than two and a half or three inches deep, however ſmall it may be. The ſoil made uſe of for covering the bulbs, ſhould be frequently turned over, and thoroughly expoſed to the ſun and air, ſome time before it is made uſe of, that it may be rendered perfectly ſweet, and free from the acrid quality that moſt ſoils are ſubject to, when taken conſiderably below the ſurface.

But if the bed is only to contain five rows, with a path in the front, and none behind, then it will be proper to plant the ſmalleſt and loweſt growing roots in the front, next the path, and ſo gradually to increaſe in the ſize of the roots to the fifth or laſt row, which ſhould contain the ſtrongeſt and largeſt of all; when the roots are properly covered with ſoil, as before directed, the ſurface of the bed will ſlope one way, forming an inclined plane: it will be neceſſary to ſupport its higheſt ſide, at leaſt, with boards, or brick-work, otherwiſe the earth would be liable to crumble down, and leave the roots bare, or too ſhallow.

When the operation of planting is concluded, the bed may be hooped over, and taken care of, in the manner directed for Hyacinths, *i. e.* ſo as to preſerve it from very heavy rains, and ſevere froſts; but either one or the other, in moderation, will be of more ſervice than injury to it.

By the end of February every plant in health will be viſible above ground; ſome tall early ſorts will be two or three inches high, others one inch, and the later ſorts juſt making their appearance; indeed a very few remarkably late ſorts may be a week longer before they appear, but not more: if, on examination, any diſtemper, or canker, is diſcernible on the foliage, about this time, either above, or an inch or two below the ſurface of the ſoil, it ſhould be carefully cut out, with a ſharp knife, and the wounded part left expoſed to the ſun and air, which will preſently heal it: a fine dry day ſhould be made choice of for the foregoing operation.

If the ſurface of the bed appears to be of too cloſe and ſolid a contexture, it ſhould be carefully ſtirred up, about two inches deep, which will admit the air more freely, and prove, in all reſpects, very beneficial.

By the end of April, ſome of the plants will probably be grown ſo tall as to require the hoops to be raiſed a little, to ſecure the bloſſom from injury: attention to this part muſt not be omitted, for the bloſſom is very tender and ſuſceptible of being bruiſed and disfigured, by a very ſlight blow, or rub againſt the hoops. As ſoon as any of the earlier ſorts begin to ſhew colour, they ſhould be ſhaded from the ſun, for, when its heat is conſiderable, it will cauſe the colours to run, and intermix, in ſuch a manner as to deſtroy the elegance and beauty of the flower; ſome ſorts are more particularly liable to this effect than others, and will be ſpoiled in five minutes.

When the greater part of the bloſſoms have begun to open, a frame, or awning, ſhould be erected over the bed and paths, nearly ſimilar to that for Hyacinths: that is to ſay, ſo as to keep out rain, and admit as much light as poſſible; this muſt be thrown off, or rolled up, at every favourable opportunity, as directed for Hyacinths, except that it ſhould be done rather earlier in the morning, and later in the evening; becauſe the ſun has acquired a greater degree of altitude and power at this ſeaſon of the year than earlier. If theſe frequent expoſures to the light and air be omitted, the colours of the flowers will be faint and weak, and the grandeur of effect will be loſt, or conſiderably leſſened.

The cloth covering ſhould come down on each ſide, within about three feet of the ground, to allow a free circulation of air, except in windy weather; from the effects of which, the flowers muſt be moſt carefully preſerved, by a continuation of the covering quite down to the ground, on the windy ſide; a line of mats ſewed together, and their upper edge nailed to the frame on that ſide, may anſwer the purpoſe, if the cloth is not of ſufficient length.

Tulips never require to be artificially watered, in the hotteſt and drieſt ſeaſons, at any period from planting to taking up the roots; nevertheleſs, moderate rains may always be admitted before, and in very ſmall quantity after the bloom is over; but early in the ſpring, they are abſolutely neceſſary, in order to procure a ſtrong bloom.

When the awning is erected, the hoops ſhould be carefully taken away, the ſides and ends of the bed ſhould be neatly boarded up, and the paths lowered two or three inches, to bring the flowers nearer to the eye: a ſlight frame, about two foot high, ſhould ſurround the bed, to prevent the garments of ſpectators from rubbing againſt, or breaking off the flowers; lines of ſmall twine, painted green, and correſponding with the rows of flowers, ſhould paſs from one end of the bed to the other, faſtened to the end pieces of the frame, and ſtretched tight: to theſe the ſtems of the flowers are to be looſely tied with ſhort pieces of green worſted, which will preſerve a pleaſing regularity of appearance, without ſtiffneſs and formality. Tulips will bear to be covered a longer time in bloom than moſt other flowers, without ſuſtaining any conſiderable injury; it may be continued three weeks with great ſafety.

If any roots ſhould periſh, or fail to produce bloom, the deficiency may be made good in the following manner: it is neceſſary, in the firſt place, to be provided with two ſtrong tin inſtruments, or tubes,[e] each having two ſubſtantial, perpendicular, iron handles, to force the inſtrument into the ground, and draw it up again, with the plant and earth connected with its root and fibres; but in order to diſcharge its contents into the place prepared for their reception, by the other inſtrument, of exactly ſimilar dimenſions, it ſhould be held together on one ſide by a ſtrong wire, which upon being drawn out, when the plant is placed in the ſituation it is intended for, will allow the tube to ſpring open a little, ſo as to permit it to be drawn up again, without diſturbing the plant; this tube, or tranſplanter, ſhould be perfectly cylindrical, open at both ends, be about twelve inches long, ſix in diameter, and made of the ſtrongeſt and beſt tin plate:

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[e] See Plate 5. Fig. 5.

one of theſe tubes may ſerve to take out the defective plant, with its earth, &c. and the other to bring a well blown flower from the offset beds, to ſubſtitute in its place; the inſtrument ſhould be forced into the ground, as deep as its length will admit, otherwiſe the fibres will be broken off ſo near the root as to check the growth of the plant; but the operation may be performed with ſo much dexterity and addreſs, as not to do the plant any material injury, or retard its growth in any conſiderable degree: it will be proper to give the newly introduced plant about a pint of ſoft water immediately, or its ſtem will be apt to bend a little at firſt. Thoſe who do not chooſe to take the trouble of repairing their bed in the foregoing manner, may immerſe the lower end of the ſtems of flowers, taken from the offset beds, in phials, filled with water, and ſunk into the bed, ſo as not to appear above ground; theſe will continue in bloom ſeveral days, without requiring to be changed, and will make a tolerable appearance.

About a week or ten days after full bloom, when the petals of many begin to drop off, the awning ſhould be taken down, together with the frame, boards, &c. that ſurround the bed; and the mats and hoops may be replaced as before, to throw off exceſs of rain, as the caſe may require: and as the leaves or petals of any fall, the ſeed veſſel of ſuch ſhould be immediately broken off, cloſe to the ſtem; for if ſuffered to remain on the plant, it will procraſtinate the period of its maturity, and weaken the root conſiderably.

The bed may remain in this ſtate about a fortnight longer, by which time the graſs, or foliage, will become of a yellowiſh brown, and two or three inches of the top of the ſtem will wither, dry up, and become purpliſh: this denotes the critical period to take up the roots, becauſe if done earlier, they will be weak and ſpongy, and if deferred later, their juices will become groſs; this will be manifeſt at the ſucceeding bloom, by too great a redundance of colorific matter in the petals, and the flowers will be what is generally termed foul.

When the roots are taken up, they are to be gradually dried, and placed in a ſituation where they may remain ſo: it will not be neceſſary to do any thing more to them till Auguſt or September following; at which time, it is proper to take off their looſe ſkins, fibres, and ſuch offsets as are eaſily ſeparated; obſerving not to leave the roots too bare, becauſe the action of the air upon ſuch, would have a tendency to weaken and injure them, by drying up part of their juices: the laſt brown ſkin, which is ſo intimately connected with the root, ſhould remain on it till the time of planting; it ſhould then be entirely ſtripped off, and the root left perfectly bare and white; but it ſhould be performed with great care, to avoid bruiſing or wounding the root, eſpecially at the lower end, where the fibres are formed, which is at this time extremely tender, and will ſcarcely bear to be touched: a ſmall ſharp-pointed penknife is the beſt adapted inſtrument for the above operation.

The ſmalleſt and weakeſt offsets, particularly ſuch as are not provided with a brown ſkin, may be replanted as ſoon as they are taken up, about an inch and half deep, in a freſh ſandy loam, in a dry ſituation, and the bed defended from heavy rains, by means of mats and hoops, as before; or, inſtead of replanting theſe offsets ſo early, they may be preſerved from the air, by being buried in dry ſand till the autumn, and are then to be planted with the larger roots, but not quite ſo deep.

Tulips are hardier, and, of courſe, leſs liable to receive injury from froſt, than moſt kind of flowers; the offsets, and more ordinary kinds, may be planted in any part of the garden, from two to four inches deep, according to the ſize of the roots, in a good ſound ſoil, with a little rotten cow dung, placed from ſeven to twelve inches below the ſurface: the beds ſhould be dug twenty inches deep, and raiſed ſix or eight inches above the walks, formed rather convex on the ſurface, and may be provided with hoops and mats, to be uſed as circumſtances require.

Hail ſtorms are very injurious to the foliage of Tulips, early in the ſpring; for wherever a hail-ſtone falls or ſtrikes, the part is bruiſed, the free circulation of the juices and growth of the plant is impeded, the wounded parts loſe their verdure, and a diſagreeable effect is produced to the eye; therefore, although it is not abſolutely neceſſary to cover the inferior beds of Tulips, during a common winter, yet it is highly proper to defend them againſt hail ſtorms in the ſpring; and likewiſe to cover them when in bloom, in caſe of hot or windy weather, which would ſoon deſtroy their beauty.

Thoſe who wiſh to procure new varieties of Tulips, ſhould procure the beſt ſorts of Breeder Tulips, a name they are generally known by; theſe conſiſt of one plain colour, on a white or yellow bottom: no perſon ſhould make the attempt who is not poſſeſſed of a great fund of patience and perſeverance, as the period of procuring finely broken Tulips from breeders is very uncertain, ſo much ſo that it is not unuſual to wait ten or twenty years without the deſired ſucceſs, although it ſometimes happens fortunately to take place the firſt, ſecond, or third year of their blooming; and where the collection of breeders is numerous, there may be reaſonable expectations of procuring one or two valuable new flowers annually, but not otherwiſe: a poor dry ſoil is moſt likely to produce theſe effects; and a ſingle inſtance has occurred, where forty breeders out of fifty became broken, or variegated, in one ſeaſon, in a ſituation of this deſcription.

New ſorts of breeders are procured from ſeed, but ſuch only as have very tall ſtrong ſtems, with large well formed cups, clear in the bottom, are worth cultivating.

The ſeed ſhould be ſaved from the moſt perfect breeders, in preference to the fineſt of the variegated or broken ſorts, as the ſeed of ſuch produces nothing but poor weak breeders, of no value. It ſhould remain growing on the ſtem till the Pericarpium becomes of a browniſh colour, and begins to open; it is then ſufficiently ripe, and ſhould be cut off, with ſix or eight inches of the ſtem, and treated afterwards, in all reſpects, agreeable to the directions given for the management of Hyacinth ſeed. Some of the ſeedlings will bloom by the fourth or fifth, and moſt, if not all, by the ſeventh year.

Early Tulips ſhould be planted a month or ſix weeks before the late blowers, at rather a leſs depth, and in a warmer ſituation; they will then blow in March or April following; their ſtems are much ſhorter, and their properties, in general, are much inferior to the late blowers; they conſiſt of only Byblocmens and Bizards, of which, however, there are many varieties.

A Deſcription of the Properties of a fine Variegated Late TULIP.

THE ſtem ſhould be ſtrong, elaſtic, and erect, and about thirty inches above the ſurface of the bed.

The flower ſhould be large and compoſed of ſix Petals: theſe ſhould proceed a little horizontally at firſt, and then turn upwards, forming almoſt a perfect cup, with a round bottom, rather wideſt at the top.

The three exterior petals ſhould be rather larger than the three interior ones, and broader at their baſe: all the petals ſhould have perfectly entire edges, free from notch or ſerrature; the top of each ſhould be broad and well rounded; the ground colour of the flower, at the bottom of the cup, ſhould be clear white, or yellow; and the various rich coloured ſtripes, which are the principal ornament of a fine Tulip, ſhould be regular, bold, and diſtinct on the margin, and terminate in fine broken points, elegantly feathered or pencilled.

The centre of each leaf, or petal, ſhould contain one or more bold blotches, or ſtripes, intermixed with ſmall portions of the original or breeder colour, abruptly broken into many irregular obtuſe points.

Some Floriſts are of the opinion that the central ſtripes, or blotches, do not contribute to the beauty and elegance of the Tulip, unleſs confined to a narrow ſtripe, exactly down the centre, and that they ſhould be perfectly free from any remains of the original or breeder colour: it is certain that ſuch appear very beautiful and delicate, eſpecially when they have a regular narrow feathering at the edge; but the greateſt connoiſſeurs in this flower unanimouſly agree, that it denotes ſuperior merit, when the Tulip abounds with rich colouring, diſtributed in a diſtinct and regular manner throughout the flower, except in the bottom of the cup, which, it cannot be diſputed, ſhould be a clear, bright white or yellow, free from ſtain or tinge, in order to conſtitute a perfect flower.

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On

ON RANUNCULUSES.

RANUNCULUSES may either be planted before or after winter: if the ſoil and ſituation is remarkably cold and wet, it will be better to defer planting to the middle or end of January, or beginning of February, as the weather may favour; but, in other ſituations, the latter end of October, or beginning of November, is to be preferred, as the roots will have more time to vegetate, and form themſelves, and will, in conſequence, bloom rather ſtronger, though only a few days earlier than the later planted.

Ranunculuſes are originally natives of a warm climate, where they blow in the winter, or more rainy ſeaſon of the year:

they are of courſe, naturally partial to coolneſs and moiſture exempt from froſt, which the more delicate ſorts cannot bear, in any conſiderable degree, without material injury.

A freſh, ſtrong, rich, loamy ſoil is preferable to all others for Ranunculuſes.

The bed ſhould be dug from eighteen inches to two feet deep, and not raiſed more than four inches above the level of the walks, to preſerve the moiſture more effectually: at about five inches below the ſurface ſhould be placed a ſtratum of two year old rotten cow dung, mixed with earth, ſix or eight inches thick; but the earth above this ſtratum, where the roots are to be planted, ſhould be perfectly free from dung, which would prove injurious, rather than of benefit, if too near them. The fibres will draw ſufficient nouriſhment from it at the depth above mentioned; but if the dung was placed deeper, it would not receive ſo much advantage from the action of the air, which is an object of conſequence.

The ſurface of the bed ſhould be raked perfectly even and flat, and the roots planted in rows, at the diſtance of about five inches from each other. It is better to plant in ſhallow trenches, made nearly two inches deep, than to make holes for the reception of the roots: there ſhould be a little clean coarſe ſand ſprinkled into the trench, and the roots ſhould be placed with their claws downwards, from three to four inches aſunder, according to their ſize: when the trench has received its roots, it ſhould be carefully filled up level with the ſame earth that was taken out, ſo as to cover the root exactly one inch and a half deep, which is the only true depth to procure a good bloom: it is pointed out, by nature, in a ſingular manner; for when theſe roots have been planted too ſhallow or too deep, in either caſe, a ſecond root is formed at the proper depth, by which the plant is weakened to ſuch a degree that it ſeldom ſurvives a repetition of it.

Ranunculus roots will remain ſeveral days in the ground after planting, before they begin to vegetate; during this period, they become very much ſwelled, by imbibing the moiſture of the ſoil, and are, in this ſtate, extremely ſuſceptible of injury from froſt, much more ſo than when vegetation has actually taken place. As ſoon as the bed is planted, a ſufficient quantity of barley or oat ſtraw ſhould be placed near it, ready for a covering: in caſe of froſt, it may perhaps be neceſſary, during a very ſevere winter, to cover the bed in this manner, ten or fifteen inches thick; but the ſtraw ſhould be taken off at all favourable times; for the effects of covering too much, or too long, are as deſtructive as the reverſe, eſpecially before the roots have begun to vegetate, becauſe they are then more liable to become mouldy than at any other period, than which nothing can be more prejudicial.

Early in the ſpring, when the plants make their appearance above ground, ſo as to render the rows eaſily diſcernible, the ſurface of the earth, between each row, ſhould be trodden or beaten, ſo as to make it firm and compact; and if the ſoil is compreſſed with the fingers, quite cloſe to the plants, it will keep out any cold drying winds that may happen, and prove beneficial. It is adviſable to make choice of a fine dry day, ſoon after rain, whilſt the ground is ſtill moiſt, to perform the above operation: when it is finiſhed, a little long ſtraw ſhould be placed between each row, to preſerve the ſurface of the ſoil cool and moiſt, till the foliage of the plants is ſufficiently grown and expanded, to afford it ſhade without further aſſiſtance.

April ſhowers, and frequent rains in May, are eſſentially neceſſary to the growth and vigour of the plants: if theſe fail, ſoft water muſt be adminiſtered in ſufficient quantity between the rows, by means of a common watering pot, with a long tube or ſpout, held low, ſo as not to waſh the earth into holes; for it is better to avoid watering the plants themſelves, as it may chill them too much, and ſtagnate their juices. The conſequences of omitting to water when neceſſary, are theſe, viz. The plants will make little progreſs; the bloſſom buds of the ſtrongeſt will be ſmall, and the weaker plants will not bloom at all; the graſs, or foliage, will put on a ſickly yellowiſh appearance, from which it will never recover during the ſeaſon; and, laſtly, the roots will, when taken up, be ſmall and lean.

But ſuch kind of waterings, however neceſſary, are by no means ſo ſalutary to theſe, or any other flowers, as fine, warm, natural ſhowers; they can neither be ſo equally diſpenſed, nor are the plants naturally diſpoſed to receive them when the atmoſphere is dry, becauſe their pores and fibres are contracted, and they are, as it were, in the expectancy of dry weather.

Since it is evident that artificial waterings are, in all reſpects, ſo much inferior to natural, it is, therefore, better to wait a day or two, in hopes of a change of weather, than to be too haſty in affording theſe ſuccours, although the plants may appear to ſuffer for the moment, by the omiſſion; for if ſuch a change ſhould fortunately take place, they will receive infinitely more benefit from it than when both themſelves and the ſoil are already ſaturated, or repleniſhed, with moiſture.

The weather in May is ſometimes very clear and hot; the plants ought to be ſhaded at ſuch times by means of lofty hoops and mats, or ſome better contrivance, that will admit light and air freely; a frame and covering, ſimilar to that for Hyacinths, would anſwer beſt, if expence and trouble were not to be conſidered: it will, however, be abſolutely neceſſary to ſhade them, in ſome manner, during the period of bloom, otherwiſe they will continue but a very ſhort time, eſpecially the dark rich coloured ſorts; for, in proportion as their colours approach to black, is the injury they will receive from the rays of the ſun, if it is permitted to ſhine upon them in full force; ſome of the very darkeſt cannot ſtand it one hour, without being entirely ſpoiled. The light-coloured ſorts will bear the ſun's rays much better, reflecting them in proportion as they approach to white; green is the only colour that reflects and abſorbs the rays of light in equal proportion, and is more predominant in the vegetable kingdom than any other.

After the bloom is over, watering is no longer neceſſary, but ſhading, in the middle of hot days, is ſtill very beneficial to the plants: it tends to prolong their vegetation, and the ſize and ſubſtance of the roots are thereby increaſed.

By the end of June, or ſoon after, the greater part of the plants will appear brown and dry; vegetation has then ceaſed, and it is the exact time to take up the roots, becauſe if they are ſuffered to remain in the ground till rainy weather enſues, the roots will begin to ſhoot afreſh, and thereby ſuſtain conſiderable injury. When the roots are taken up, their ſtems, &c. ſhould be cut off cloſe, and they ſhould be placed in a ſhady, airy room, or ſituation, to dry gradually; but before this is perfectly accompliſhed, it will be proper to clean and ſeparate them, becauſe, when they are quite dried, they become very hard and brittle, and there is great danger of breaking off their claws: ſome may be ſeparated into many complete roots, although they are ſo cloſely connected, as, on a ſuperficial obſervation, to have the appearance of only one large root.

Nothing more remains to be done, till the return of the planting ſeaſon, except to ſtow the ſorts ſeparately in bags, or boxes, for the ſake of convenience, in a dry room, in which ſtate it is poſſible to keep them out of ground for two or three years, without periſhing, although it evidently tends to weaken and injure them: there have been inſtances known, of Ranunculus roots ſurviving till the fifth or ſixth year; they were, however, rendered extremely weak, nor could any but very ſtrong roots retain their vegetative powers for ſo long a period.

A bed conſiſting of ſcarlet turband Ranunculuſes, produces a moſt brilliant effect, if the roots are of a proper ſize to bloom well: if theſe roots are planted at the ſame time as the Tulips, they will alſo bloom together; they are hardier than other Ranunculuſes, but may, in other reſpects, be treated in the ſame manner.

New ſorts of Ranunculuſes are, like all other plants and flowers, produced from ſeed, which, in no inſtance, ever produces two alike, or the ſame as the original; hence the infinite variety which the inexhauſtible fund of nature is capable of continually affording thoſe who will take the pains of purſuing her in this track: this theorem holds equally good, whether applied to the animal or vegetable kingdom; though it muſt be confeſſed, there is, in many inſtances, ſo great a ſimilarity in appearance, as ſcarcely to admit of diſtinction.

Ranunculus ſeed is to be procured from ſemi-double flowers: care ſhould be taken to ſave it from ſuch as are poſſeſſed of good properties, *viz.* ſuch as have tall ſtrong ſtems, a conſiderable number of large well-formed petals, and rich good colours, chiefly preferring the darker, but not to the excluſion of the lighter coloured, when their properties anſwer the foregoing deſcription.

The ſeed ſhould remain on the plant till it has loſt its verdure, and becomes brown and dry, it may then be cut off, and ſpread abroad upon paper, in a dry room, expoſed to the ſun, that every degree of humidity may be exhaled from it; in which ſtate it ſhould be put into a bag, and preſerved in a warm dry room, or cloſet, till the time of ſowing, otherwiſe it will be in danger of contracting a dampneſs, which will ſoon produce a mouldineſs, that will infallibly deſtroy it.

January is the proper time to ſow the ſeed, and in order to prepare it, it muſt be ſeparated from the ſtalks to which it is connected, in the following manner, *viz.* In the firſt place, it ſhould be taken out of the bag, and ſpread thin upon a ſheet of paper, or tea tray, &c. and placed before a moderate fire, till it is juſt warm, and no more; the ſeed will then eaſily ſcrape off, by means of a pen-knife; but great care muſt be taken to avoid ſcraping it off in lumps, or ſuffering any pieces of the ſtalk, dried petals of the flower, or other extraneous matter to be mixed with it, which would create a mouldineſs when ſown, of very deſtructive conſequence: when the ſeed is ſcraped in a proper manner, it will have much of the appearance of clean coarſe bran, with a little brown or purple ſpeck in the centre of each cuticle, which is the kernel.

When the ſeed is thus prepared, it ſhould be ſown in a ſhallow frame, provided with glaſſes, ſimilar to thoſe made uſe of for cucumbers and melons; the ſoil ſhould have been previouſly taken out, three feet deep, and ſpread thin upon the ground, till it has been perfectly frozen throughout, in order to deſtroy any vermin it may have contained, more particularly the common earth worms; theſe are extremely deſtructive, both to the ſeed and the young plants, which they draw into their holes for nutriment, from a very conſiderable diſtance.

When the pit is filled up again, with the frozen lumps of earth, it ſhould remain till the whole maſs has thawed, and ſubſided to its priſtine bulk, or nearly ſo; its ſurface ſhould then be made perfectly ſmooth and even, and the ſeed ſown upon it with the utmoſt regularity, in ſuch quantity as nearly to cover it; the glaſſes ſhould be placed over it immediately, and the frame kept cloſely covered with them, for two or three days, till the ſeed begins to ſwell and ſoften;

ſoften ; a little light earth ſhould then be ſifted upon it, through a fine ſieve, but not ſufficient to cover it ; this ſhould be repeated once or twice a week, till the greater part of the ſeed diſappears : it is proper to remark in this place, that ſuch ſeeds as happen to be covered deeper than the thickneſs of a half-crown piece, will never vegetate, and muſt, of courſe, inevitably periſh. MILLER, in his Gardener's Dictionary, recommends that Ranunculus ſeed be ſown about one quarter of an inch deep ; if his practice agreed with his theory in this inſtance, it may be ſafely aſſerted that he never raiſed a Ranunculus from ſeed in his life.

It is neceſſary to keep the ſeed moderately moiſt, by gentle waterings with ſoft water, that has been expoſed to the ſun till it is a little warmed ; the roſe of the watering pot ſhould be hemiſpherical, and perforated with a great number of very ſmall holes, that will diſcharge fine ſtreams of water, in a very diſtinct and regular manner; the roſe ſhould be made of copper, it being leſs liable to corrode than iron.

But although it is neceſſary to the vegetation of the ſeed that it be kept rather moiſt, too great a degree of moiſture is nevertheleſs injurious.

About the time that the plants begin to make their appearance, it is proper to ſtir the ſurface of the earth with a pin, or ſilver bodkin, juſt ſufficiently to admit air, and give liberty to the young plants to paſs eaſily through; this operation ſhould be very carefully performed, to prevent breaking off the fibres, or raiſing and leaving any of the plants out of the earth, becauſe one hour's ſun upon ſuch, would inevitably deſtroy them.

When the ſun ſhines very hot, it is neceſſary to admit ſome freſh air under the glaſſes, and ſhade the frame with mats; but it ſhould be cloſe ſhut up with the glaſſes when the air is cold, and always at night.

After the plants are all up, and their two interior leaves appear, more air muſt be given, by having hurdles, or lattice-work, ſubſtituted for the glaſſes; waterings muſt be regularly continued, in the manner before deſcribed, when the long continuance of dry weather renders it neceſſary; but fine warm ſhowers of rain are always preferable, when they happen in due time.

This kind of management is to be continued till the roots are matured, and fit to take up, which is known by the foliage becoming perfectly brown, dry, and nearly conſumed.

The ſpeedieſt and ſafeſt method of taking up theſe ſmall roots is to pare off the earth, three inches deep, with a trowel, or ſhovel, having previouſly carefully picked off the dried leaves, and any other extraneous matter that may be found upon it. The earth and roots, thus collected, are to be thrown into a fine braſs-wire ſieve, that will not permit the ſmalleſt roots to paſs through it; the ſieve is then to be worked in a large veſſel, or tub, nearly filled with water; the earthy part will, in conſequence, be diſſolved and waſhed away, and the roots will remain in the ſieve, where, by a little management, they may be eaſily ſeparated from the ſtones, &c. which are mixed with them. The upper rim of the ſieve muſt, at all times, be held above the ſurface of the water, otherwiſe ſome of the ſmalleſt roots will be loſt, as they are frequently found floating on the ſurface, till they have imbibed a ſufficient quantity of water to make them ſink. The roots are to be dried and preſerved in the manner before directed, and are to be planted at the ſame time as large roots in the autumn; the greater part, or ſuch as have two or more claws, will blow ſtrong the following ſummer.

A Deſcription of the Properties of a fine DOUBLE RANUNCULUS.

THE ſtem ſhould be ſtrong, ſtraight, and from eight to twelve inches high, ſupporting a large well-formed bloſſom, or corolla, at leaſt two inches in diameter, conſiſting of numerous petals, the largeſt at the outſide, and gradually diminiſhing in ſize as they approach the centre of the flower, which ſhould be well filled up with them.

The bloſſom ſhould be of a hemiſpherical form; its component petals ſhould be imbricated in ſuch a manner as neither to be too cloſe and compact, nor too widely ſeparated; but have rather more of a perpendicular than horizontal direction, to diſplay their colours with better effect.

The petals ſhould be broad, and have perfectly entire, well-rounded edges; their colours ſhould be dark, clear, rich, or brilliant, either conſiſting of one colour throughout, or be otherwiſe variouſly diverſified, on an aſh, white, ſulphur, or fire coloured ground, or regularly ſtriped, ſpotted, or mottled, in an elegant manner.

There are more numerous varieties of beautiful Double Ranunculuſes than of any other flower.

ON ANEMONES.

ANEMONES require nearly the ſame treatment as Ranunculuſes, therefore it will not be neceſſary to give ſo long and particular a deſcription of their culture and management; the following remarks are all that appear needful to be added, and more would perhaps be conſidered, at leaſt, unneceſſary.

Anemones are hardier than Ranunculuſes, and, conſequently, may be always planted in the autumn with ſafety; the moſt adviſable time is about the middle of October, by which means they will blow a week or two earlier than the Tulips: if they are planted ten days or a fortnight after the Tulips, they will all bloom together; but a few days earlier or later in the planting will ſcarcely be perceptible at the time of flowering: it is, however, proper to obſerve that ſuch roots as are planted in October, will blow ſtronger, and, when taken up, will be found of a larger ſize than thoſe that are planted towards the end of November, eſpecially if the winter proves mild; but if the winter ſets in early, and proves ſevere, late planted roots will not have time to vegetate before froſty weather takes place; in which caſe there will be great danger of their periſhing, unleſs they are covered with ſtraw, juſt ſufficiently to keep froſt from the roots, as they are then in a ſtate of inactivity, but replete with moiſture, which renders them more ſuſceptible of injury from froſt, and, at the ſame time, in much greater danger of mouldineſs, than after vegetation has commenced. The covering muſt therefore be taken off and put on, as often, and in ſuch proportion, as the exigency or circumſtance of the caſe requires.

The beds ſhould conſiſt of the ſame kind of ſoil, and be prepared in the ſame manner as for Ranunculuſes; the roots ſhould be at nearly ſimilar diſtances from each other, and be planted in the ſame manner, except that they require to be covered rather deeper, *i. e.* they ſhould be planted about two inches deep; it requires ſome care and attention to diſtinguiſh which ſide of the root is to be placed uppermoſt, eſpecially if the ſmall thread-like fibres have been entirely cleaned off, after the laſt taking up.

The roots are in general flat, and their eyes, from whence the ſtems and flowers proceed, on examination are eaſily diſcernible on one ſide of the root, which, of courſe, ſhould be planted uppermoſt; the other ſide will conſequently have its true poſition, as the fibres naturally ſhoot forth in an oppoſite direction to the ſtem, foliage, &c.

Although, as before obſerved, Anemones are hardier, and can bear a greater degree of cold and drought than Ranunculuſes, moiſture is nevertheleſs almoſt equally ſalutary and beneficial to them, nor ought they ever to be deprived of it, when it is naturally afforded; but if that does not happen in ſufficient quantity, occaſional waterings, with ſoft water, muſt not be omitted, eſpecially on the approach of, and during bloom, and they ſhould be applied in the manner as is directed for Ranunculuſes.

The bloſſoms and petals of Anemones are of a more ſoft and flexible texture than thoſe of Ranunculuſes, and are conſequently more liable to receive injury from high winds and heavy rains than the latter; their colours ſoon fade when expoſed to a clear ſun; it is therefore equally neceſſary to ſhelter them whilſt in bloom, in order to prolong their beautiful appearance.

Anemones continue longer after bloom in a ſtate of vegetation than Ranunculuſes, probably becauſe of their greater degree of ſucculency; and even at the proper time to take them up, it will ſometimes happen, that part of their foliage will not be entirely diveſted of greenneſs and moiſture; this will often be the caſe when frequent ſhowers of rain intervene, and are admitted between the times of blowing and the maturity of the roots: when it thus happens, much ſkill is required to aſcertain the critical period to take up the roots; for if they are ſuffered to remain in the damp or wet ground a few days too long, they will ſhoot afreſh, and be thereby materially weakened and injured; it is indeed better to take them up rather too early, than ſuffer them to re-vegetate in this manner, but the roots will not be ſo firm and ſolid as if done at the exact time. The ſafeſt and moſt effectual method to preſerve them from theſe diſagreeable conſequences, is to keep off all rains after the bloom is quite over, by means of mats on hoops; the roots will then regularly and gradually mature, and the foliage will, in like manner, become brown and dry, which will point out the true time to take up the roots; and this will uſually happen to be about a month after full bloom.

The whole ſubſequent treatment of the roots, till the time for planting, is the ſame as for Ranunculuſes, with only the following caution, *viz.* that as the roots are exceedingly brittle, it is neceſſary to handle them very gently upon dreſſing or cleaning away their fibres, and the ſoil that adheres to them; however, ſhould only ſmall pieces break off, ſuch ſhould not be thrown away, as each will, in the courſe of a few years, become a blooming root, if it has an eye, without which it is of no value; but that ſeldom happens to be the caſe.

Large overgrown roots, which are hollow in the centre, will not blow ſo ſtrong as freſh young roots that are perfectly ſound, and not more than two or three years old: the former will naturally ſeparate into many ſmall pieces, when they are ſufficiently decayed at the heart; thoſe ſmall pieces will, however, in time become good blooming roots.

The conſtitution of Anemones undergoes conſiderable changes with age, which perhaps is in a greater or ſmaller degree the caſe with all other vegetables. The Anemone will not laſt more than twelve or fifteen years[f] without degenerating, unleſs it be frequently removed to a different ſoil and ſituation; nor will any removals protract or prolong its exiſtence more than thirty or forty years. It generally blows in its greateſt degree of perfection from the fifth to the tenth or twelfth year, after which it becomes gradually ſmaller and weaker; and if the flower was originally very full and double, with age it loſes that property, the petals diminiſh in number, become ſmall and irregular, and finally the ſort periſhes. It has more than once occurred, that the ſame ſort, although in the poſſeſſion of many perſons, reſiding at remote diſtances from each other, has been entirely loſt in one ſeaſon, without the poſſibility of accounting for the fact in any other manner than the above.

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[f] The Ranunculus will laſt about twenty or twenty-five years in perfection; it afterwards degenerates and periſhes. Tulips, and many other kinds of flowers of vigorous conſtitution, will continue for a very long time in ſtrength and beauty, ſo long as to render it difficult, if not impoſſible, to aſcertain the period of their duration.

Anemones are raiſed from ſeed in the following manner: in the firſt place, the ſeed is to be ſaved from ſingle or ſemi-double flowers, that have ſtrong, tall, and erect ſtems, large well-formed cups and petals, of very brilliant colours:

it muſt be gathered from time to time as it opens; for being very downy and light, it will otherwiſe be blown away by the firſt breeze of wind, or fall down and be loſt: it may be ſown at the ſame time, and be treated in all reſpects, like that of Ranunculuſes; the ſeedlings will, like thoſe, blow ſtrong the ſecond year.

It will be found very difficult to ſow Anemone ſeed in a regular manner: it is united with, and enveloped in a downy ſubſtance, that upon being put together in quantity, adheres in ſuch a manner as to render it neceſſary to make uſe of ſome ſand or earth to ſeparate it on ſowing; nor will this be effected ſufficiently without conſiderable labour in rubbing it for a long time amongſt the earth, as it ought not to adhere together in lumps, which would not allow the young plants ſpace enough to form their roots.

There will be found but few double flowers amongſt the ſeedlings, nor can it hardly ever be expected there ſhould, if the ſeed be entirely ſaved from ſingle ones; of courſe, the greater number of broad petals the flower of the ſeed-bearer poſſeſſes, ſo much greater is the probability of procuring large double flowers from the ſeed of it.

A Deſcription of the Properties of a fine DOUBLE ANEMONE.

THE ſtem ſhould be ſtrong, elaſtic, and erect, not leſs than nine inches high.

The bloſſom, or corolla, ſhould be at leaſt two inches and a half in diameter, conſiſting of an exterior row of large ſubſtantial well rounded petals or guard leaves, at firſt horizontally extended, and then turning a little upwards, ſo as to form a broad a broad ſhallow cup, the interior part of which ſhould contain a great number of long ſmall petals, imbricating each other, and rather reverting from the centre of the bloſſom; there are a great number of ſmall ſlender ſtamens, intermixed with theſe petals, but they are ſhort, and not eaſily diſcernible.

The colours ſhould be clear and diſtinct when diverſified in the ſame flower, or brilliant and ſtriking if it conſiſts only of one colour, as blue, crimſon, or ſcarlet, &c. in which caſe, the bottom of the broad exterior petals is generally white; but the beauty and contraſt is conſiderably increaſed when both the exterior and interior petals are regularly marked with alternate blue and white, or pink and white, &c. ſtripes, which in the broad petals ſhould not extend quite to the margin.

ON VARIOUS

BULBOUS-ROOTED FLOWERS.

SOME ſhort account of a few other bulbous perennial flowers may not be improperly introduced in this place; but the greater part being of little value, and eaſily cultivated, it does not ſeem neceſſary to enter into a very minute or prolix inveſtigation of their properties or culture.

A good, ſound, freſh ſoil, either of the black or loamy kind, with the addition of a little coarſe ſea, or river ſand, placed round the roots on planting, and manured with rotten cow-dung, two years old, if the ſoil and ſituation be dry and warm, or rotten horſe-dung if it be cold and wet, is all the compoſt or preparation required for the greater part of theſe flowers, obſerving that the dung ſhould never come in contact with the bulbs, or be placed at ſo great a depth from the ſurface of the ſoil as to loſe the advantage of the due action of the air upon it, which would render it poiſonous inſtead of nutritious: in ſhort, it ſhould never be placed more than eight or ten inches deep, on any occaſion, where it can poſſibly be avoided.

The Polyanthus-Narciſſus conſiſts of many varieties, each ſort produces ſeveral flowers on one ſtalk; the roots may be planted in September or October, about three or four inches deep; they ſucced beſt in rather a warm, dry ſoil and ſituation; but if the ſoil happens to be the reverſe, the bed ſhould be raiſed ſeven or eight inches above the common level, and muſt be covered with ſtraw in caſe of ſevere froſt, ſo as to preſerve the roots from it. The ſurface of the bed ſhould be formed rather rounding, or mats on hoops ſhould be placed over it, in caſe of exceſſive rains. The roots may remain two or three years in the ground without being diſturbed: it will then be neceſſary to take them up, in order to ſeparate their offsets, which by being longer connected with the old roots, will cauſe them to blow ſmall and weak.

Their bloom will be preſerved longer in beauty, like that of all other flowers, if ſhaded from the heat of the ſun, and preſerved from rains: when the circulation of their juices ceaſes, and their foliage becomes yellowiſh, the roots may be taken up, cured, and preſerved in the ſame manner as directed for Hyacinths.

Double-Narciſſus (Daffodils) conſiſt of ſeveral varieties; they are hardier than the former, the Italian excepted: and may be treated in nearly a ſimilar manner; but are in leſs danger from the effects of froſt.

Jonquils; Engliſh, Spaniſh, and Perſian Bulbous-Iris; the three firſt conſiſt of ſeveral varieties; they may be planted about two inches deep, at the ſame time, and treated in the ſame manner as Polyanthus-Narciſſus: the Spaniſh Bulbous-Iris is very hardy.

Crown-Imperials, Lilies, and Pæonies, conſiſt of ſeveral varieties; theſe may be planted in Autumn, about four or five inches deep, in any ſoil or ſituation, being extremely hardy; they do not require to be taken up till the third or fourth year, and then only to ſeparate their offsets.

Martagons (Mountain-Lilies with inverted bells and reflexed petals) conſiſt of many varieties, and may be treated in the ſame manner as other Lilies; they, however, make the beſt appearance on a bed by themſelves, and will grow ſtronger with the addition of ſome manure, at the depth of ſix inches from the ſurface.

The Arum Dracunculus, Lilium Perſicum, and Pancratium Maritimum, may be planted in September and October, covered with ſoil, about one or two inches above the top of the root: they are very hardy.

Colchicums, Autumnal Crocuſes, Fritillaries, Dog's-Tooth Violets, Orchis's, Snake's-Head Iris, and various Hyacinths, &c. may all be planted about one inch deep, and remain in the ground till it becomes neceſſary to ſeparate their offsets: if required to be removed, it is adviſable to do it whilſt their juices are in a ſtate of inactivity, early in the autumn; but they are all extremely hardy, and will bear removal at almoſt any ſeaſon of the year.

Anemonoides are to be treated like Anemones, except the Alba, Lutea, and Roſea,[g] the roots of which are very long and ſmall, and will not bear to be kept long out of ground in a dry ſtate.

Spring-Crocuſes, and the hardy ſorts of Gladiolus, may be planted any time in the autumn, about one inch deep, and require no covering from froſt.

Cyclamens ſhould be planted early in autumn, one inch deep, in pots filled with ſound rich earth, mixed with ſand. Thoſe ſorts that bloom in the autumn ſhould be planted in the ſpring; they will not require to be tranſplanted oftener than once in two or three years, and ſhould have pots proportionably larger as their roots increaſe in bulk: they are propagated only from ſeed, and are not very tender, except the autumnal Anemone-rooted ſort, which ſucceeds beſt in a hot-houſe or green-houſe.

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[g] Theſe three ſorts are not of the ſame ſpecies, although ſo called by Floriſts.

The Lilium Fl. Aur. Max. Fol. Eleg. Var. is the moſt delicate of all the ſorts of Lily, and has the ſmalleſt root: it ſhould be planted in rather a warmer ſituation than the reſt, about one inch deep, and be covered with ſtraw during ſevere froſt.

Antholyza's, Ixia's, Crinum's, Guernſey and Jacobea Lilies, Oxalis, Morea, Amaryllis, Pancratiums, the Maritimum excepted, and the tender ſorts of Gladiolus, ſhould all be planted in autumn, in pots proportionate to the ſize of the bulbs, ſo that the top of the root be one inch below the ſurface of the earth, which ſhould be light and rich. They are all tender, and ſucceed beſt in a hot-houſe or green-houſe: it is, however, abſolutely neceſſary to preſerve them from every degree of froſt; they require but little water in winter, and ſhould have the advantage of as much light and air as can be admitted with ſafety.

It would exceed the intended limits of this treatiſe to enter upon the culture, &c. of the almoſt innumerable ſpecies and varieties of other bulbous, herbaceous, annual, and perennial flowers, which are of little import to the flower fancier; and ſo well known, in general, as to render an addition of the kind, to this work, by no means neceſſary.

ON AURICULA.

THE compoſt proper for the Auricula ſhould conſiſt of the following ingredients, in the annexed proportions, *viz.*

One half rotten cow-dung, two years old.[h]

One ſixth freſh ſound earth, of an open texture.

One eighth earth of rotten leaves.

One twelfth coarſe ſea, or river, ſand.

One twenty-fourth ſoft, decayed willow wood.[i]

One twenty-fourth peaty, or moory earth.

One twenty-fourth aſhes of burnt vegetables.

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[h] Why proper to make uſe of the dung two years old, vide the ſupplement.

[i] Found in the trunks of old willow trees.

In order to procure the laſt article with very little trouble, any weeds, ſticks, ſtraw, or old mats, that are of no other value, may be collected together in a heap, and conſumed by fire, in the open air, till their aſhes become white; they will contain a ſmall portion of alkaline ſalts, and ſhould be ſpread upon the ſurface of the other ingredients.

The compoſt is to be placed in an open ſituation, perfectly expoſed to the action of both air and ſun, from the influence of which it will reap great benefit: it ſhould be turned over once or twice, and as often paſs through a coarſe ſkreen, or ſieve, that it may be well mixed, and incorporated: it ſhould then be laid in a regular heap, or maſs, from fifteen to eighteen inches thick, but not more; in this ſtate it may remain a year before it is made uſe of, during which period it will be proper to turn it over two or three times, in order to expoſe all its parts to the atmoſphere, to mature and meliorate them more perfectly: the compoſt ſhould always be kept free from weeds, as they rob it of its nutritive qualities.

The due preparation and proper conſiſtence of the compoſt is of very great importance: nor will the plants ſucceed well, for any conſiderable length of time, if this part be not particularly attended to.

The pots come next under conſideration, as they are the next article to be provided: theſe ſhould be hard baked, and ſhaped as follows, *viz.* the interior diameter of the top ſix inches and a half, the bottom four inches, and about ſeven inches deep, for common ſized blooming plants; but ſmaller plants and offsets ſhould have ſhallower pots, of a proportionate width and depth, and very large plants may have pots of a larger ſize, in the ſame proportion; the inſide of the bottom of the pots ſhould have a ſmall degree of concavity, and a little hole in the centre, of about half an inch in diameter, that no water may lodge or remain in that part; the rims of the pots ſhould project on the outſide, about half an inch, for the greater eaſe and ſafety in taking them up, or removing them from one place to another.

New pots obtain in the operation of baking or burning an abſorbent quality, and it is neceſſary to ſaturate them perfectly with water, before they are made uſe of for the plants; this may be effected by burying them in wet earth, or immerſing them in water for three or four days, or a week, before they are wanted for uſe: the harder the pots are baked the leſs they abſorb; at the ſame time they are much ſtronger, and will conſequently be of longer duration.

The moſt adviſable time to tranſplant, or as it is uſually termed to pot Auriculas, is immediately, or ſoon after bloom, and this ſhould be repeated annually (notwithſtanding the opinion of ſome people to the contrary, who ſay the plants bloom better the ſecond year after potting) for this obvious reaſon, that it preſerves the health and conſtitution of the plants, by affording them a freſh ſupply of nutriment; and at the ſame time the cultivator has an opportunity of curtailing their fibres, if grown very long, or of cutting off the lower part of the main root, if too long, or the end of it if decayed; thereby forcing the plants, as it were, into a ſtate of action, and cauſing a continued circulation of their juices, during the ſummer, in the formation of new fibres, for their neceſſary ſuſtenance and ſupport: whereas, if this operation of potting is not performed till the ſecond year, the ſoil muſt have loſt a conſiderable part of its nutritious quality, which will produce a proportionate decline in the ſtrength of the plants: and if it be deferred till the autumn, there will not be time for a ſufficient reproduction of the fibres before winter ſets in, the effects of which will be a faint-coloured and weak bloom the enſuing ſpring.

But the moſt dangerous conſequence ariſing from an omiſſion to pot Auriculas in the ſpring, is their remaining too much in a ſtate of inactivity during the heats of ſummer, the ſeaſon, of all others, wherein they are moſt liable to contract a deſtructive diſeaſe, which has ſometimes been known to take place in ſo extenſive and extreme a degree, as to ſweep away the greateſt part of a large collection in the courſe of a few months: nor has this occurred only in a ſingle inſtance, it has happened to ſeveral very capital collections, both in this country and abroad; but it ſeldom or never occurs in a cool and wet climate.

It is almoſt impoſſible to ſtop the baneful influence and progreſs of this diſtemper, when it has once taken poſſeſſion, and more eſpecially when it has been occaſioned by a defective or improper compoſt, rather tending to increaſe the diſtemper than to aſſiſt nature in throwing it off: the ſafeſt method is to remove any plant that appears infected, as ſoon as it is diſcovered to be ſo, to a part of the garden remote from the healthy plants, that the contagion may not reach them: the firſt ſymptoms of the diſorder in the plants is a loſs of verdure, or a yellowiſh ſickly appearance; they ſoon after decay on one ſide, and become crooked, or elſe the main root of the plant rapidly decays quite through, and the head drops off; in fact, the juices of the plant are vitiated at the time the foliage begins to appear ſickly, ſo that no time muſt be loſt in freſh potting it into proper ſoil, and removing it to a cool ſhaded ſituation: this is the only likely method to recover the infected plants, or to prevent the total deſtruction of the collection; but it is certainly more adviſable to avoid ſo dangerous a malady, by freſh potting the plants in the ſpring, than to run any ſuch riſque as the before mentioned, by deferring the operation till autumn, or poſtponing it to the ſecond year; it likewiſe affords an opportunity to take off the offsets, which will at this ſeaſon of the year ſtrike fibre freely, and become well eſtabliſhed before the return of winter.

The only objection of any importance, againſt ſpring-potting, is, that ſome ſorts will in conſequence be more inclined to blow in the following autumn, and thereby deprive the plant of its capacity to bloom well the enſuing ſpring: this, however, occurs but in few inſtances.

In potting or tranſplanting Auriculas, the plant ſhould be carefully turned out of the former pot, and the earth ſhaken from its fibres, which ſhould be curtailed if found too long and numerous, together with the lower end of the main root, and the fibres attached to that part, if it appears too long, or ſomewhat decayed, for reaſons before given; the plant is to be at the ſame time carefully examined, and wherever any unſoundneſs appears, it muſt be entirely eradicated by means of a ſharp pen-knife, let the extent of it be ever ſo great, till no appearance of decay remains; particularly in that part of the main root where it enters the ſurface of the earth, or as the ſailors phraſe it, betwixt wind and water, which being alternately wet and dry, is more ſubject to decay than any other part, and for the ſame reaſon is the moſt difficult to heal: the wounded part ſhould be immediately expoſed to the ſun, and when the ſurface of the wound is perfectly dry, a cement ſhould be applied, conſiſting of bees-wax and pitch, about one half of each, warmed and ſoftened in the ſun, or by a fire, to make it adhere more firmly on application: this will become cloſe and hard when cold, will reſiſt moiſture, and is the beſt application to prevent further progreſs of the decay yet diſcovered. Whenever the lower leaves of the plant, next the ſurface of the earth, become yellow, or dried up, it is proper to ſtrip them off, in a direction downwards. On re-planting, a pot ſuitable to the ſize of the plant is to be ſelected; it is to have a hollow oyſter ſhell placed with its convex ſide upwards, over the hole at the bottom, and then to be about three parts filled with the compoſt, higher in the middle than at the ſides: the plant is next to be placed thereon, with its fibres regularly diſtributed all round, ſo as nearly or quite to reach the ſides of the pot, which is afterwards to be filled up with the compoſt, adding a little clean coarſe ſand cloſe round the ſtem of the plant, on the ſurface: the bottom of the pot ſhould then be gently ſtruck two or three times againſt the table, which is ſuppoſed to be made uſe of for the ſake of convenience in the operation, in order to render the ſoil more firm and compact; this will cauſe it to ſink or ſubſide about half an inch below the top of the pot, which will prevent the loſs of water when it is adminiſtered.

N. B. The true depth to plant an Auricula, is within about half an inch of the bottom of its loweſt or outſide leaves; as the new and moſt valuable fibres proceed from that part, ſo they ſhould immediately meet with earth to ſtrike into, or otherwiſe they will periſh: it will likewiſe encourage the offsets, if there be any, to ſtrike root ſooner than they would do if not in contact with the ſoil. When the offsets have formed one or more fibres, of an inch or two in length, they may, by means of a piece of hard wood, or by the uſe of the fingers, be ſeparated from the old plant with ſafety, and re-planted round the ſides of a ſmall pot, filled with the ſame compoſt, till they become ſufficiently grown to occupy pots ſeparately: if a ſmall hand glaſs be placed over each pot containing theſe newly planted offsets, it will cauſe their fibres to grow more rapidly; but it ſhould not be long continued, as it would have a tendency to draw and weaken the plants.

In the beginning of May, as ſoon as the operation of potting is performed, the plants are to be placed in an airy, ſhaded ſituation, but not under the drip of trees: the following is recommended as a proper plan for the ſummer repoſitory, *viz.* In the firſt place, there ſhould be a bed of coal-aſhes formed in the place where it is intended to be erected, about five or ſix inches thick ; or a platform of plain ſquare tiles, cloſely fitted to each other, on the ſurface of the ground, to preſerve the pots from the common earth-worm, which, by gaining admittance into them, would perforate, and alter the conſiſtence of the ſoil, in ſuch a manner as to prove very injurious ; upon this foundation, rows of bricks are to be placed in ſtraight lines, about two or three inches aſunder, which will allow a free circulation of air under and between the pots when placed upon them, an object of great importance, eſpecially in warm weather, when the air is moſt inclined to ſtagnate, and become impregnated with noxious effluvia.

The plants, by the above plan, will be raiſed from nine to twelve inches above the level of the aſhes or platform.

There ſhould be two rows of ſubſtantial ſtakes, three feet long, and five inches by three wide, one row of which ſhould be placed on each ſide, at about three or four inches diſtance from the two outſide rows of pots: theſe ſtakes ſhould be driven twenty inches into the ground, with their narrow ſides towards the pots, and have notches cut in their tops, to receive the edges of the ſhutters they are intended to ſupport.[k] By way of illuſtration, ſuppoſe the whole length of the platform to be twelve yards, and the width three feet, it will contain ſeven rows, and each row about ſeventy pots, a ſufficient number to conſtitute a moderate collection for a private gentleman. Five ſhutters, made with feather-edged inch deal boards, each four yards long, and two feet ſix inches wide, will reach the whole length on one ſide : three of the notched ſtakes will be ſufficient to ſupport one of theſe ſhutters; of courſe, fifteen ſtakes at proper diſtances will completely anſwer the purpoſe on one ſide: the notches are to be cut in the form of a V, two inches deep, and three inches wide at the top, which will give room for the ſhutters to move backwards and forwards without difficulty or danger of ſlipping out.

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[k] Vide Plate 6. Fig. 1.

Both ſides are thus to be provided with ſtakes and ſhutters, the upper edges of the latter ſhould meet over the centre of the platform, when the plants require to be covered with them, in the form of the ridge or roof of a houſe, well fitted and ſloping equally on both ſides, ſo as to throw off rain, without even admitting it to drip through upon the plants in any part.

It is neceſſary that a rail, or row of ſtakes, of a proper height and ſtrength, ſhould proceed from the ground between the two middle rows of pots, to ſupport the ſhutters when cloſed or cloſing, eſpecially as it is uſually more convenient to begin to cover or uncover on one ſide firſt, and finiſh on the other; without a ſupport of this kind, in ſuch caſe, the ſhutters muſt fall down upon the plants: a ſimilar, exterior rail, or row of ſtakes, is neceſſary on each ſide, to ſupport the ſhutters when open, with the ſame degree of ſlope, in a contrary direction than when cloſed; by which means the plants will have a free communication with the air, whether covered or open; nor are they entirely deprived of light, when the ſhutters are cloſed, becauſe the lower edge of the ſhutters is as high or higher than the top of the plants at all times. The peculiar advantage ariſing from this plan is, that when the plants require to be ſhut up from exceſs of rain, they have at the ſame time the advantage of a continual ſupply and free circulation of freſh air, which paſſes amongſt their leaves in all directions; whereas thoſe who are obliged to ſhut up their plants in a cloſe frame, to exclude exceſs of rain from them, oftentimes ſhut them up in a wet ſtate, as ſoon as it is judged they have had a ſufficiency: this is a very dangerous, though not unuſual mode of practice, and often produces a mildew which is attended with the moſt deſtructive conſequences.

The importance of a proper conſtructed repoſitory, and ſuitable treatment of the plants, for the ſummer ſeaſon, will ſufficiently apologize for any prolixity in the deſcription: it cannot indeed be too ſtrongly impreſſed on the mind of the cultivator of this delicate flower, that his ſucceſs more particularly depends on the health and vigour of his plants towards the end of ſummer, than at any other period of the year. The plants, after being placed in the ſummer repoſitory, are to be kept moderately moiſt: if the rains that happen are not ſufficient, they muſt be occaſionally watered with ſoft water, by a ſmall pot[1] with a round curved ſpout, about twelve inches long: the pot ſhould hold about two quarts of water, ſo as to be eaſily manageable with one hand, and the ſpout ſhould be narroweſt in the middle; for inſtance, if it is an inch wide at the end next the pot, it ſhould be about half an inch wide at its mouth or other extremity, and about a quarter of an inch wide in the middle; it will then deliver the water in a full perpendicular volume, and in ſo ſoft and gentle a manner as not to waſh the ſurface of the ſoil into holes, in the ſmalleſt degree; but the mouth of the ſpout ſhould be held very near the ſurface, and be briſkly moved round the plant, taking care not to let any water fall into the heart, or amongſt the interior leaves of the plant, as it could not ſpeedily dry up in that part, and, of courſe, would endanger a decay; any water lodging in the heart of the plants in ſpring, when the bloſſoms begin to make their appearance, cannot fail to injure them conſiderably.

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[1] Vide Plate 5. Fig. 8.

The plants are to remain in their ſummer ſituation till September or October, as the weather may be more or leſs favourable, or until the heat of the ſun has conſiderably decreaſed; they are then to be removed into their winter repoſitory, which is to be conſtructed in a manner exactly ſimilar to that for the ſummer ſeaſon, with only one exception, *viz.* that the ſouth-ſide of it ſhould conſiſt of frames of glaſs, inſtead of the wooden ſhutters:[m] theſe are to act in the ſame manner, but will admit of light when the plants are of neceſſity ſhut up from adverſe weather, which frequently occurs during winter; the admiſſion of light at ſuch times is indiſpenſably neceſſary to the well-being of the plants, eſpecially when the long continuance of rain, or ſevere froſt, renders it requiſite to keep them covered, ſometimes perhaps for a day or two, with little or no intermiſſion.

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[m] Vide Plate 6. Fig. 1. for a perſpective view of the winter repoſitory.

In the firſt favourable weather that occurs in February, it is neceſſary to diveſt the plants of their decayed exterior leaves; and by the middle of that month, the operation of earthing up, as it is termed, ſhould commence; that is to ſay, the ſuperficial earth of the pot ſhould be carefully taken away, about an inch deep, and freſh compoſt, with the addition of a little loam, to give it more tenacity, ſhould be ſubſtituted in its ſtead: this will contribute greatly to the ſtrength of the plants, and the vigour of their bloom; at the ſame time it will afford a favourable opportunity to ſeparate ſuch offsets as ſhall appear poſſeſſed of ſufficient fibre, to be taken off at this early ſeaſon with ſafety: theſe offsets, when properly planted in ſmall pots, ſhould be placed in a frame, in ſome warm ſheltered ſituation, till their roots are eſtabliſhed.

The Auricula is by no means a tender plant, yet it will be proper to cover the repoſitory with mats, in caſe of ſevere froſt; for although it probably would not deſtroy the plants, unleſs it happened in an extreme degree, it would, however, injure them, and perhaps ſpoil their bloom, particularly, early in the ſpring, when the ſtem begins to riſe; it would certainly, at that period, deſtroy, or render the pips[*] abortive.

If any plant is poſſeſſed of more than one or two principal ſtems, it is adviſable to pinch off the pips of the ſmalleſt and weakeſt, in order to render the bloſſoms of the remaining one larger and more vigorous than they would be if this was omitted to be done in due time.

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[*] The word *Pip* is a term ſubſtituted by Floriſts, for the corolla of the Auricula and Polyanthus.

It is a curious fact, that thoſe ſorts which are naturally poſſeſſed of a fine green on the edge or margin of the flower, are often known to loſe that property, when the ſtem proceeds from the very heart or centre of the plant: whereas thoſe ſtems that proceed from the ſide, produce larger pips, poſſeſſing their true natural colours in much greater perfection; theſe laſt are called the winter ſtems, becauſe they are uſually forwarder, and produce their flowers rather earlier in the ſeaſon than thoſe which proceed from the centre of the plant.

When the pips become turgid, and begin to expand, they muſt be preſerved from rain; nor ſhould they remain any longer in a ſituation expoſed to cold winds: on the contrary, ſuch plants ought to be ſelected from the reſt, and removed to a calm, ſhady corner, where they ſhould have ſmall hand glaſſes ſuſpended over them in ſuch a manner as to preſerve the bloom from rain, &c.[o] and yet admit a free circulation of air, both to the plant and to the bloſſom, it being equally neceſſary for the one as for the other.

The ſtage for the pots to ſtand upon, whilſt in bloom, comes next under conſideration:[p] it ſhould have a northern aſpect, that the ſun may not ſhine on the flowers; it ſhould conſiſt of four rows of ſhelves, in the form of ſteps, but muſt not exceed five; the front, or loweſt ſhelf, ſhould be two feet five inches from the ground, the ſecond about three inches higher than the firſt, and the reſt in the ſame proportion; theſe ſhelves ſhould be about ſix inches wide, ſtrong, and well ſupported, otherwiſe the weight of the pots will cauſe them to bend or give way. If the ſtage conſiſts of four rows of ſhelves, its depth, from front to back, ought to be about two feet eight inches; the north or front elevation of the ſtage ſhould not be leſs than ſeven feet, gradually ſloping to about five feet ſix inches on the ſouth-ſide; the roof ſhould conſiſt of frames of glaſs.

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[o] Vide Plate 5. Fig. 6.

[p] Vide Plate 6. Fig. 2.

N.B. Thoſe frames of glaſs made uſe of on the ſouth-ſide of the winter repoſitory, will anſwer extremely well for this purpoſe; but as they will not be wide enough to form the roof completely, without addition, a ſingle row of feather-edged boards may be placed on the loweſt part of the ſlope, and the lower edge of the frames of glaſs may reſt upon them; theſe boards will anſwer another good purpoſe, by preventing the ſun, which at this ſeaſon of the year has obtained a conſiderable degree of altitude, from ſhining on the firſt and ſecond rows of plants, during the middle of the day, when it has moſt power; although the plants of the back row will, in conſequence, have rather leſs light, yet it is not ſo materially injurious as the former.

Thoſe who make uſe of boards, or any dark covering, for the roof of their ſtage, thereby cauſe their plants to be drawn and weakened; the ſtems alſo grow to a great length, and are unable to ſupport themſelves in an erect poſition without props, which have no very agreeable appearance; the pips, likewiſe, will neither be ſo large, nor their colours ſo ſtrong and good, as when light is more copiouſly admitted.

The poſts ſupporting the roof of the ſtage, on the ſouth-ſide, may be ſo conſtructed, and placed at ſuch diſtances from each other, as that the wooden ſhutters, made uſe of on the north-ſide of the winter repoſitory, may fit between them, and form a regular ſhed, as low or lower than the higheſt ſhelf: the remaining ſpace to the ground may be left open in mild calm weather, or may be eaſily cloſed up, by a line of mats ſewed together, in caſe of the reverſe. The eaſt and weſt ends of the ſtage ſhould be entirely boarded up from top to bottom, and the front left open, unleſs in unfavourable weather, and at night; at theſe times, it may be defended by frames of wood, covered with canvaſs: theſe ſhould be about ſix feet wide, ſuſpended from the front edge of the roof by hinges; they will ſerve both to defend the bloom, when let down, and alſo by each having two ſmall iron rods, about five feet ſix inches long, connected with their loweſt edges by ſtaples, that will allow them to move in any direction, and ſupport them when up; will defend the path in front from rain, take off the glare of light when the ſun ſhines, and at the ſame time, defend the ſpectators from its heat.

The inſide of the back and ends of the ſtage, and the ſhelves likewiſe, ſhould be painted black, or ſome very dark colour, by way of contraſt to the white eyes, &c. of the flowers: and if a large looking-glaſs be placed at each end of the ſtage, the effect produced will be very pleaſing, by apparently lengthening the ſtage each way as far as the eye can reach.

As Auriculas and Hyacinths generally blow exactly at the ſame time, the beauty and elegance of the ſcene is conſiderably increaſed by having a ſtage of the former, and a bed of the latter, under the ſame awning, with an intermediate path, about ſix feet wide; in which caſe, if the cloth covering of the Hyacinths is fine enough to admit a ſufficiency of light, it may be continued over the Auricula ſtage, inſtead of the glaſs and boards, and will anſwer all purpoſes tolerably well with little trouble: or otherwiſe, the edge of the cloth covering, for the bed and path, may be nailed to the upper or front edge of the glaſs frames, over the Auriculas, in ſuch manner as effectually to prevent rain dripping through in that quarter.

A row of fine Polyanthuſes, in pots, may likewiſe be introduced in front of the Hyacinths, as they likewiſe blow at the ſame time; it will add to the variety, and form altogether a more elegant aſſemblage of beautiful fragrant flowers than any other ſeaſon of the year can afford.

The talleſt blowing Auriculas ſhould ſtand on the laſt or moſt diſtant ſhelf, and the ſhorteſt in front; thoſe ſtems which are weak, and bend, ſhould be ſupported with ſmall wires, fixed in the earth behind them, ſo as not to be eaſily diſcerned. If any of the ſtems and bloſſoms of thoſe in the back row incline forward too much towards the light, they may be eaſily recovered to an erect poſition, by turning the pots for a few hours in the morning; but the glaſs roof will render very little of this trouble neceſſary: the pots muſt be regularly watered, two or three times every week, during the bloom.

When the bloom is declined, the plants are to be removed into their ſummer repoſitory,

poſitory, where they will ſoon recover their former ſtrength and vigour, which, notwithſtanding the utmoſt care and precaution, will have been in ſome degree impaired by ſtanding two or three weeks upon the ſtage.

During ſummer they muſt be kept regularly watered, in the manner before directed, and the earth of the ſurface muſt be ſtirred a little occaſionally till September, about which time it will be proper to remove them into winter quarters, where they are to remain till the approach of bloom, as aforeſaid.

No perſon can depend on a complete ſtage of Auriculas, who is not provided in autumn, or early in the ſpring, with twice as many blowing plants as his ſtage will contain, becauſe ſome will eventually prove defective, and fail in one reſpect or other: and a ſucceſſion of proper plants in bloom will be required to replace ſuch, as being earlier than the reſt, or of ſhorter duration, are no longer eligible to remain on the ſtage, and ought, in conſequence, to be taken away, and more ſuitable ones brought on, in their ſtead.

Whenever the outſide leaves of the plants appear yellow, or dried up, they ſhould be carefully pulled off; becauſe when they become wet, there is danger of a mouldineſs or infection taking place in that part of the plant to which they are connected.

But whenever the ſurface of the earth in the pots appears green, or moſſy, it is indiſpenſably neceſſary to ſtir it up about an inch deep, if poſſible, without diſturbing or breaking off any of the fibres: if, indeed, trouble were not conſidered, it would be moſt adviſable to take away the moſſy ſurface entirely, and ſubſtitute freſh compoſt inſtead of it; if, however, ſeaſonable ſtirring be attended to properly, this green or moſſy ſurface will never appear, and it will likewiſe prove eminently beneficial in other reſpects.

The ſureſt and beſt method to obtain fine Auriculas from ſeed, is as follows, *viz.* In the firſt place, young, healthy, and ſtrong plants ſhould be provided, of capital high-coloured ſorts, poſſeſſing firſt rate properties: theſe, on the approach of bloom, ſhould be detached from the reſt, to a remote part of the garden, and there expoſed to the ſun, air, and rain, when the laſt is in moderation; but if in exceſs, they ſhould be preſerved from it by mats on hoops, or the ſmall hand-glaſſes uſed for the other plants, previous to their being ſtaged, may be placed over them. In dry weather, the ſeed plants muſt be regularly watered, in the manner before directed, or otherwiſe with a fine roſe, as often as they appear to require it: much depends on a due attention to this particular point.

The ſeed will commonly ripen in June and July; it is adviſable frequently to viſit the plants at this period, and carefully to gather ſuch pods or heads of ſeed as appear perfectly dry and brown, and begin to open: if all the pods upon the ſame ſtem are ripe together, they may be cut off with part of the ſtem to which they are connected; but if ſome of the pods are not ſufficiently ripe, ſuch as are ſhould be carefully picked out from the reſt, as they become ſo. The ſeed, thus collected, ſhould remain in the pericarpium, or ſeed-veſſel, in a dry room, till the ſeaſon for ſowing.

January, or early in February, is the proper time to ſow Auricula ſeed, and the following method of raiſing it, is recommended as the moſt certain of being attended with ſucceſs.

A hot bed, with frames and glaſs lights, ſimilar to thoſe made uſe of for cucumbers and melons, is to be in readineſs. Provide a box, or boxes, about five or ſix inches deep, fill it with the compoſt, and gently ſhake or ſtrike it againſt the ground, till the earth ſettles a little; make the ſurface perfectly ſmooth and even, and ſow the ſeed with the utmoſt regularity; then ſift, through a fine wired ſieve, a little compoſt, or decayed willow mould, upon it, ſufficient only juſt to cover the ſeed, and place the box in the frame on the ſurface of the hot bed; the glaſſes muſt be placed over it, and ſo managed as to preſerve a moderate and equal degree of warmth, both day and night, but muſt be occaſionally opened, or raiſed up at the higher end, to admit freſh air, and to ſuffer the exhalations from the bed to eſcape, which is a very eſſential point.

The ſuperior advantage this has over the common methods of raiſing the ſeed, is, that it forces every live grain into vegetation in about three weeks, if the warmth of the bed is properly kept up: whereas, by the more uſual mode of expoſure to the open air, the greater part does not vegetate till the ſecond year; and the weaker ſeeds, which are probably the moſt valuable, ſeldom vegetate at all.

The earth and ſeed muſt always be kept moderately moiſt, but never very wet; the beſt method of watering it is by means of a hard clothes-bruſh, dipped into ſoft water, which has had its chill taken off by ſtanding in the ſun, the hair ſide being quickly turned upwards, and the hand rubbed briſkly over it, will cauſe the water to fly off in an oppoſite direction, in particles almoſt as fine as dew; a ſufficient watering may in this manner be given in a few minutes. If it is found impoſſible to preſerve the heat of the firſt bed till the ſeed has all vegetated, it will be proper to remove the box to a ſecond, prepared in the ſame manner, which will infallibly anſwer the purpoſe with proper management: if the ſurface of the earth in the box is inclining to become moſſy, or mouldy, it muſt be ſtirred all over very carefully with a pin, about as deep as the thickneſs of a ſhilling.

At the expiration of three, four, or at moſt five weeks, the young plants will all make their appearance; it then becomes neceſſary to give them very gradually more air, in order to harden and render them more fit for an entire expoſure to it, which they will be able to bear in a fortnight or three weeks afterwards: at which time the box ſhould be taken out of the frame, and placed in rather a warm ſituation, though not too much expoſed to the ſun, till towards the end of April, when it may again be removed to a cooler aſpect, where it can only receive the ſun till nine o'clock in the morning; and in May, if the weather is hot, it ſhould be placed in the moſt cool and airy part of the garden, not neglecting, at any time, to keep the earth moderately moiſt; but at the ſame time preſerving it from violent rains whenever they occur.

As ſoon as any of the plants appear with ſix leaves, ſuch ſhould be taken out from the reſt, and tranſplanted into other boxes, filled with the compoſt, about an inch and a half, or two inches aſunder; and when they are again grown, ſo as nearly to touch each other, they may be a ſecond time tranſplanted into larger boxes, or round ſmall pots, at the diſtance of three or four inches, where they ſhould remain till they blow, which will generally happen the following ſpring, perhaps before they have acquired any conſiderable ſize; and then ſuch as appear to be poſſeſſed of merit, ſhould be marked, and the inferior ones deſtroyed. As ſoon as the bloom is over, ſuch as have been marked ſhould be taken up, and planted ſeparately in ſmall pots, and be taken the ſame care of as other Auriculas, till they blow again; at which time their reſpective merits and properties may be aſcertained with more accuracy. Such weakly plants as are not able to blow the firſt or ſecond year, ought nevertheleſs to be carefully preſerved; for amongſt theſe it often happens that the moſt valuable flowers are to be diſcovered.

A great proportion of the ſeedlings, although the ſeed was ſaved from the beſt flowers, will be plain coloured, or ſelfs, which unleſs poſſeſſed of excellent properties in other reſpects, or being ſingularly beautiful in their colours, are of no value, but as common border flowers for noſegays.

A Deſcription of the Properties of a fine Variegated AURICULA.

THE ſtem ſhould be ſtrong, erect, and elaſtic, and of a proper height, that the bunch or truſs may be above the foliage of the plant.

The peduncles, or foot-ſtalks of the flowers, ſhould alſo be ſtrong and elaſtic, and of a proportional length to the ſize and quantity of the pips, which ſhould not be leſs than ſeven in number, that the bunch may be rather round, cloſe, and compact.

The component parts of the pip, are the tube (with its ſtamins and anthers); the eye, and the exterior circle, containing the ground-colour, with its edge or margin: theſe three ſhould be all well proportioned, which will be the caſe if the diameter of the tube be one part, the eye three, and the whole pip ſix, or nearly ſo.

All the admirers of this flower agree that the pips ought to be round; but this ſeldom happens; and we muſt be content if they are ſo nearly round as not to be what is termed ſtarry.

The anthers, or ſummits of the ſtamins, ought to be large, bold, and fill the tube well, and the tube ſhould terminate rather above the eye; the eye ſhould be very white, ſmooth, and round, without any cracks, and diſtinct from the ground or ſelf-colour.

The ground colour ſhould be bold and rich, and equal on every ſide of the eye, whether it be in one uniform circle, or in bright patches; it ſhould be diſtinct at the eye, and only broken at the outward part into the edging; a fine black, purple, or bright coffee-colour, contraſt beſt with the eye; a rich blue, or bright pink, is pleaſing, but a glowing ſcarlet, or deep crimſon, would be moſt deſirable, if well edged with a bright green; but this muſt ſeldom be expected.

The green edge, or margin, is the principal cauſe of the variegated appearance in this flower; and it ſhould be in proportion to the ground-colour, *i. e.* about one half of each.

The darker grounds are generally covered with a white powder, which ſeems neceſſary, as well as the white eye, to guard the flowers from the ſcorching heat of the ſun's rays, which would ſoon deſtroy them if they were expoſed to it.

ON CARNATIONS.

THE compoſt recommended to be uſed for ſuch Carnations as are grown in or near large towns, is as follows, *viz.*

One half rotten horſe-dung, one year old, or that has been uſed as a hot bed for cucumbers, melons, &c.
One third freſh ſound loamy earth.
One ſixth coarſe ſea, or river, ſand.

Theſe ingredients are to be mixed together in autumn, laid in a heap about two feet thick, in an open expoſure, and turned three or four times during winter; or, otherwiſe, the dung alone, after being uſed as a hot bed, may be thrown together in a heap, of a conic form, in order to rot more perfectly; and, as its ſurface freezes in winter, it ſhould be pared off, and laid on one ſide, till the whole maſs has been thoroughly frozen throughout; this may be repeated as often as the ſeaſon permits, and it will be completely fit for uſe the following ſpring: the earth and ſand may be added to it in March, when wanted to freſh pot the plants for bloom: the whole ſhould then be well mixed and incorporated together, and paſſed through a coarſe ſkreen or ſieve, to reduce its parts, and take out ſtones, or any other extraneous ſubſtances which it may contain. In country places, where the air is more pure, experience has pointed out the propriety of uſing leſs dung, and more loam; the proportions of which, for ſuch ſituations, may be reverſed, *viz.* one half loamy earth, and one third dung, with the ſand as before ſpecified: the preparation of the compoſt, in other reſpects, is to be exactly the ſame in all ſituations.

The pots made uſe for ſpring-potting ſhould be of the following dimenſions, *viz.* at leaſt twelve inches wide at the top, ſix inches at the bottom, and ten inches deep in the inſide, with a circular aperture in the centre of the bottom, of about an inch in diameter; alſo three or four ſmaller holes round the ſides of the pot, cloſe to the bottom, to prevent the poſſibility of water lodging or remaining in that part: the pots, in all other reſpects, are to be formed and prepared as directed for Auriculas.

The operation of potting ſhould commence about the middle of March, if the weather is not extremely unfavourable;

but it ſhould not, on any account, be deferred later than the end of that month. The pot is, in the firſt place, to be half filled with compoſt, having an oyſter ſhell, with its hollow ſide downwards, placed over the hole in the centre of the bottom: this compoſt is to be higher at the ſides than in the centre of the pot, and the plants intended for it, which are ſuppoſed to have been wintered in ſmall Auricula pots, containing four plants each, are to be carefully turned out of their pots, with all the earth adhering to them, in a ball; and after rubbing off about half an inch of the ſurface of the old mould, round about the plants, above their fibres, cleaning them and cutting off the decayed points of their leaves, the ball is to be carefully placed in the centre of the pot, and the ſpace between it and the ſides filled up with the prepared compoſt.

It is very neceſſary to be attentive in placing the plants, that they be neither planted deeper nor ſhallower than they were before; the compoſt ſhould therefore be high enough to replace the old earth that was rubbed off on potting, exactly to the ſame height as before, *i. e.* half an inch higher than the ball of old earth and fibres: and the whole ſurface of the earth in the pot, when the operation is finiſhed, ſhould be nearly level or flat; but by no means higher at the centre than at the ſides, becauſe the plants would thereby be kept too dry; nor ſhould the compoſt come nearer than within an inch of the top or rim of the pot, after it has been gently ſhaken, or ſtruck againſt the ground on finiſhing, as an inconvenience will attend its being too full, when the operation of laying comes to be performed, which requires ſome additional mould on the ſurface, for the layers to ſtrike into.

When the plants are thus potted off for bloom, the pots ſhould be placed in an open airy part of the garden, under an arch of hoops, that in caſe of cold drying winds, heavy rains, or froſty nights, mats may be thrown over, to preſerve them from the effects of ſuch unfavourable weather: in this ſituation they are to remain, always open to the air, except in the caſes above mentioned, and be kept regularly watered, with ſoft water, as often as appears neceſſary, either by a fine roſe, or the ſame ſmall pot made uſe of for Auriculas.

When their flower-ſtems are grown eight or ten inches high, it will be neceſſary to ſupport them with ſticks, forced into the earth in the centre of the pot, to which the ſtems are to be looſely tied with ſmall pieces of baſs mat: theſe ſticks ſhould be as high as the hoops will admit, in order that the pots may remain under them as long as poſſible; but when the ſtems are grown too high for this ſituation, the pots are to be removed to the ſtage, and remain there till the time of bloom: the ſmall ſticks ſhould be replaced with others more ſuitable for the occaſion; theſe ſhould be about four feet, or four feet ſix inches long, regularly tapering a little from the bottom to the top, and be painted green; they ſhould be ſubſtantial and ſtraight, and their lower ends are to be forced into the earth in the centre of the pot, ſufficiently deep and firm, not to be ſhaken looſe by the wind. As the ſtems continue to advance in height, the tying, as above, muſt alſo be continued, at about every five or ſix inches: it is proper to look over and examine the plants for this purpoſe every three or four days, as the ſtems are rather brittle, and liable to be broken by the wind, if not ſupported in this manner.

If any ſmall, green, winged inſects appear on the ſtems or foliage of the plants, particularly, upon, or underneath the flower-pods, they muſt be effectually extirpated or deſtroyed, either by the means of a ſmall ſoft bruſh or feather, by the application of a ſtrong infuſion of tobacco-water, or ſome ſimilar eaſy and ſafe expedient: even ſcotch ſnuff, duſted upon the infeſted parts early in the morning, while the plants are wet with the dew of the night, has been ſometimes tried in this caſe with ſucceſs.

The calyx of many ſorts contains a great number of petals, which, as they increaſe in bulk, will diſtend and burſt it, if not timely prevented: this generally happens a few days previous to the proper time for the bloſſoms opening, and will, if neglected, ſoon manifeſt the effects of ſuch neglect, by letting out the petals on one ſide, and thereby producing a looſe irregular appearance, totally deſtroying that compact, graceful, circular form which a perfect flower ought to poſſeſs, and which is one of its greateſt ornaments: but this diſagreeable effect may be eaſily avoided, by faſtening a ſmall narrow ſlip of bladder round the middle of the pod, where it is moſt ſwelled, and appears to have the greateſt inclination to burſt. The ſlip of bladder ſhould be rather longer than is required to go once round, ſo that one end of it may lay over the other a little, which, by the application of a little gum water, will adhere firmly together, and anſwer the purpoſe completely. Small ſlips of wet baſs mat may be ſubſtituted for thoſe of bladder, and being tied with a ſingle knot round the ſame part of the pod, will anſwer nearly the ſame purpoſe.[q]

When any of the flowers begin to open and expand, ſuch ſhould be ſhaded, both from ſun and rain, by means of ſtrong caps, or paper covers,[r] about twelve inches in diameter, painted white or green, and formed like an umbrella, to throw off rain: each ſhould have a ſquare tin tube on the ſummit, that will permit the ſtick, to which the ſtem is tied, to paſs through it as far as is neceſſary. The tube ſhould be about two inches long, and have a ſmall hole bored through one of its ſides, that it may be fixed by a nail to any part of the ſtick where required.

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[q] Plate 3. Fig. 2.

[r] Plate 6. Fig. 6.

But when the major part are in bloom, a cloth awning ſhould be placed over the whole, and be drawn up or let down by means of lines and pullies, exactly in the ſame manner, and on the ſame occaſions, as for the bloom of Hyacinths and Tulips.

The ſame frame that was uſed for the Tulips, will, without being removed or taken down, anſwer in every reſpect for Carnations; nor can any other more ſuitable be contrived or adopted.

In order that the flowers may appear to the greateſt advantage, it is neceſſary that the pots ſhould ſtand upon a ſtage or platform of boards[1] raiſed about twelve or fifteen inches above the ground: this ſtage ſhould be very ſtrongly ſupported, in order to ſuſtain the immenſe weight of the pots, without danger of giving way; the ſupporters of this platform ſhould ſtand in ſhallow leaden or earthen veſſels, filled with water, to prevent the acceſs of earwigs, which are deſtructive enemies to the bloſſoms of Carnations: they ſecrete themſelves, commonly during night, in the calyx, and ſoon commence their depredations, by biting off and devouring the lower ends, or claws, of the petals, which, of courſe, will cauſe them to drop out, and thereby disfigure the flower.

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[1] Vide Plate 5. Fig. 2.

The ſtands, or reſervoirs, ſhould be broad enough to allow an intermediate ſpace of water, three or four inches wide, between their ſides and the ſupporters placed in the centre of each. Earwigs will, nevertheleſs, be frequently found amongſt the flowers, having been brought upon the ſtage with the pots, where they remain concealed, or dormant, till the flowers are in bloom; or perhaps they may have gained acceſs by having crept up the external frame, and from thence fallen down upon the pots; or they may poſſibly have flown upon them, as they are evidently provided with wings, though it does not appear that they often make uſe of them. At all events, it is neceſſary frequently to examine the plants, and the ſticks which ſupport the ſtems, as earwigs will be often found concealed there in the day-time, particularly at the part where the ſtems are tied, which affords them a more ſecure hiding place. If any of the petals hang looſe, or drop out, it is a certain ſign that an earwig is, or has been there: in the firſt caſe, blowing forcibly with the mouth, into the bloſſom, two or three times, will cauſe it to creep out; but if it has quitted the bloſſom, previous to the diſcovery, it ſhould be carefully ſought after and deſtroyed, or it will continue its depredations the ſucceeding night: it will, however, moſt probably be found ſkulking ſomewhere about the ſame pot, but not further diſtant than the next, or next but one, unleſs the ſearch has been deferred too long.

The flowers ſhould be ſuſpended from the ſticks by ſmall pieces of fine elaſtic braſs wire,[t] of unequal lengths, to ſupport them in an eaſy graceful manner, neither too near together nor remote from each other; one end of the wire ſhould be introduced into the ſtick, by means of a ſmall awl, and there be fixed ſufficiently tight to prevent its dropping out by the weight of the bloſſom; the other end of the wire ſhould be formed into a ſmall ring, about a quarter of an inch in diameter, to encloſe the ſtem below the calyx; this ring ſhould be a little open on one ſide, to admit the ſtem freely, without bruiſing it, which would materially injure the bloom.

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[t] Vide Plate 6. Fig. 5 and 7.

Thoſe who are particularly curious in blowing their Carnations, carefully extract ſuch petals as are plain, or run from their true colours; they perform this by means of an inſtrument adapted to the purpoſe,[u] and with the ſame arrange the remaining petals, ſo as to ſupply the defect; in like manner they diſpoſe the whole with ſuch regularity that the flowers appear to have an equal diſtribution of beautiful petals, nearly alike on every ſide, without imbricating each other, ſo

[u] Vide Plate 6. Fig. 8.

as to hide their reſpective beauties: and if the bloſſom conſiſts of too great a number of petals, they extract the ſmalleſt, and thereby afford the others more room to expand, which takes off the confuſed effect always produced by redundancy.

The pots muſt be kept regularly and conſtantly watered during bloom, in the manner before deſcribed, and no favourable opportunity ſhould be neglected to afford them the full advantage of expoſure to light and air, by drawing up the cloth covering, in the manner before deſcribed; but no rain muſt be admitted to the bloſſoms at any period of the bloom.

Some place their ſtage, or platform, on one ſide, others in the centre; but a double row of pots on each ſide, with a commodious path in the middle, is preferable. If the pots contain only two plants each, they conſequently are not required to be ſo large as for four or five; but the latter have much the beſt appearance in bloom, producing a greater number of bloſſoms: it is not however adviſable, to permit every pod to blow, eſpecially of ſuch ſorts as are naturally poſſeſſed of but few petals; becauſe it would render each bloſſom ſmaller and thinner than if only one or two were left on each plant: it is, therefore, proper in this caſe, to cut off, or draw out, the ſmall lateral pods, cloſe to the main ſtem, as ſoon as they can be aſcertained, in order that the remainder may have time to reap due benefit by it; but thoſe ſorts that have remarkably large ſhort pods, abounding with petala, muſt be ſuffered to bloom them all, or the greater part, although, in general, three or four pods are as many as ought to be ſuffered to blow on one plant; theſe rules, or remarks, admit of ſome few exceptions, but the inſtances ſeldom occur.

The operation of laying,[w] or piping, is to commence as ſoon as the plants are in full bloom; nevertheleſs, thoſe who are particularly deſirous to preſerve their bloom in the greateſt perfection, may defer it till the flowers are on the decline; but others, who are anxious to have their plants ſtrong and well rooted early in the autumn, with a view to ſend them abroad amongſt their friends and acquaintance, that their layers may be better prepared to endure the ſeverities of the enſuing winter, will, as before obſerved, ſucceed beſt by laying at the commencement or middle of the bloom; at which time the plants being full of juices and vigour, the layers are the better nouriſhed and ſupported, and ſooner ſtrike root: but it muſt be allowed that the bloom is conſiderably impaired by the wounds inflicted in the operation, and particularly ſo when performed in an early ſtage of it; the plants ſeldom ſurvive, unleſs very ſtrong and ſound, or ſome of the upper young ſhoots be left, ſuch as are too ſhort to be laid with convenience, theſe will encourage and continue the circulation of the juices, if ſuffered to remain. Such of the old plants as appear likely to live after the layers are taken off, may remain in their pots, which ſhould be placed in the warmeſt part of the garden, plunged into the ground up to their rims, and be defended from heavy rains, and ſevere froſts, during winter, by hoops and mats:

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[w] When Carnations, &c. are propagated in the open air, by their ſhoots or layers connected with the mother plant, the operation is called laying, or layering of them; but when they are propagated by cuttings, taken from the original plant, and by artificial means cauſed to ſtrike root in a confined air, it is called piping of them.

in the ſpring of the year they may be freſh potted like the reſt.

Thoſe who are deſirous to obtain all the increaſe that can poſſibly be procured, even at the expence of the old plant's life, ſhould cut off all ſuch ſhoots as are too ſhort to be layed, and pipe them under glaſſes; but as laying is the mode of propagation moſt uſually adopted, eaſieſt to perform, and more certain of being attended with ſucceſs than piping, ſo it naturally preſents itſelf as the firſt ſubject of conſideration in this place.

The beſt time to lay Carnations is, as already obſerved, when the plants are in full bloom, which generally happens about the middle, or towards the end of July, according as the ſeaſon is more or leſs forward; the practical part of this operation is ſo well underſtood by almoſt every perſon who is acquainted with the flower, as in ſome meaſure to preclude the neceſſity of entering into a very minute detail of particulars: but for the information of ſuch as have not hitherto, but who may be deſirous of becoming cultivators of this elegant flower, it is deemed proper to point out the method moſt approved, and in general practice.

A ſufficient quantity of bone, fern, or wooden pegs are to be provided,[x] each to be five or ſix inches long, and formed ſomewhat like the figure 7, *i. e.* with a ſhort hooked end.

The pot ſhould be placed on a table, or ſtool, that the operator may be better enabled to examine the plants, dreſs the layers, and perform his operation with the greater exactneſs: he ſhould alſo have a ſharp pen-knife, and ſit down when he makes the inciſion, keep his hand ſteady, and his eye at a proper diſtance from the object.

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[x] Vide Plate 6. Fig. 3.

The layer may be ſuppoſed to have four or five joints, more or leſs; the lower leaves, next the root, are all to be cut, or ſtripped off cloſe, till within two or three joints of the end or extremity of the layer; and its extreme points are to be ſhortened with a knife, or pair of ſciſſors, ſo as to leave them only an inch and a half, or two inches, in length, from the joint whence they proceed, according to the ſtrength and ſubſtance of the layer.

All the layers in the pot are to be thus dreſſed, or prepared, before any further procedure be made; the ſurface of the earth is then to be cleared of what may have fallen on it, and ſhould be ſtirred up about an inch deep: the pot is in the next place to be filled up nearly level with ſome light rich mould, not of too fine a grain; the old Carnation compoſt uſed laſt year, will anſwer for this purpoſe extremely well, and part of it ſhould be reſerved for the occaſion.

The inciſion immediately follows: the knife ſhould have a ſmall thin blade, with a ſmooth ſharp edge; it is to be introduced on that ſide the layer next the ground, in a ſloping direction upwards, to commence about a quarter of an inch below the ſecond or third joint from the extremity, and continue through the middle of that joint, and one half or three quarters of an inch above it; the ſmall portion left under, and connected with the joint, is to be cut off horizontally, quite cloſe to the bottom of the joint, but not into it, as it is from the outer circle of the bottom of the joint that the fibres proceed, conſequently that part ſhould not be injured: but it is neceſſary to cut it off cloſe to the joint, for it would decay if ſuffered to remain, and perhaps communicate its rottenneſs to the joint itſelf, and deſtroy the plant.

At the time when the inciſion is made, the ſhoot, or layer, ſhould be held between the thumb and fingers of the left hand, and bent upwards; otherwiſe the knife muſt neceſſarily enter conſiderably below the joint, in order to paſs through the centre of it; but when held in this curved poſition, a quarter of an inch below it will be ſufficient, and attended with leſs danger than if begun lower.

After the inciſion is made, the layer is to be gently forced down to the earth, with great care to avoid breaking it off, or even cracking it at the joint, which would prevent a due communication of juices from the old plant, ſo neceſſary for the ſupport of the layer, till it has formed ſufficient root to ſupport itſelf: it would likewiſe render it more liable to decay on the application of water.

The layer is to be held down to the ſurface of the earth, by one of the pegs before deſcribed, which is to be forced into the ſoil, cloſe behind the joint where the inciſion was made; and it is proper to obſerve, that the fibres are ſooneſt formed when the joint from whence they proceed is only juſt covered with earth: for if it be buried more than half an inch deep, it will loſe much of the benefit it ſhould derive from the influence of the air, &c. and be more liable to decay; at all events it will require a longer time to ſtrike root. The remainder of the ſtalk of the layer ſhould lay, as much as poſſible, upon or above the ſurface of the pot; but muſt by no means be covered deep in the earth, which would decay it before it had ſufficiently ſupported the layer.

Fern pegs, which in moſt places are very eaſy to procure in abundance, are rather preferable to any other: they are already naturally formed in the ſtalk of the plant, and only require to be cut off at ſuitable lengths; they retain a ſufficient degree of ſtrength to hold the layers ſecurely down till they have formed root, and will decay when become no longer needful.

It is not neceſſary that the layer ſhould have, at firſt, an exactly erect poſition, it will naturally ſoon acquire it in the courſe of its growth; but it ſhould not, even at firſt, be ſo nearly horizontal as not to allow the inciſed part to open ſufficiently for the fibres to iſſue forth regularly on every ſide. It is adviſable to peg down the layers in a dry ſtate, being then leſs brittle, and, conſequently, not ſo liable to break off as when they are wet and ſucculent; therefore, as ſoon as the layers are dreſſed, the pot ſhould be placed full in the ſun for half an hour, in order to render them more flaccid and pliant than they otherwiſe would be.

But if any of the layers happen accidentally to break off, they are ſtill capable of being preſerved by piping, together with ſuch ſhoots as are too ſhort or too high to admit of being layed conveniently, alſo the increaſe or ſhoots of ſuch roots as are decayed, of which inſtances will always occur in an extenſive collection; and it frequently happens, between the times of potting and bloom, that ſome of the plants become ſickly, appear yellow and withered, and ſoon periſh, unleſs their ſhoots are timely taken off and piped.

In order to ſucceed in this more difficult mode of propagating the Carnation, it is neceſſary to be previouſly provided with a hot bed, upon which is to be placed a ſtratum, four or five inches thick, of fine light mould, laid very regular and even; the old compoſt which the Auriculas grew in the preceding year, will be proper for this purpoſe.

The cuttings intended to be piped are to have two complete joints, that is to ſay, they are to be cut off horizontally cloſe under the ſecond joint: the extremities, or points of the leaves, are likewiſe to be ſhortened, as for laying, which will leave the whole length of the piping from one inch and a half to two inches, according to its ſtrength: as ſoon as thus prepared, it may be thrown into a baſon of ſoft water for a few minutes, to plump it up.

The earth on the bed where the pipings are to be placed, ſhould be moderately moiſtened, and rendered rather compact than otherwiſe; then take one of the ſmall hand glaſſes, made uſe of for blooming the Auricula, and with it mark its dimenſions on the ſurface of the ſoil, in order to know where to ſtick in the pipings, ſo as to loſe no room, or endanger their being diſturbed when the glaſs is placed over them. The glaſſes moſt proper to be uſed on this occaſion, as well as for Auriculas, previous to their being placed on the ſtage, ſhould be of a hexagonal form, and ſix inches in diameter; the ſix ſides ſhould be about three inches deep, and finiſh with a conic hexagonal top to throw off rain:[y] each of theſe will commodiouſly contain from fifteen to twenty pipings.

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[y] Vide Plate 5. Fig. 6.

The dimenſions of the glaſs having been thus marked on the bed, the pipings are to be taken out of the baſon ſingly, and forced into the earth, in their wet ſtate, with a ſteady hand; but not more than half an inch deep.

When a ſufficient number for the glaſs are thus placed regularly, at equal diſtances from each other, and rather more than an inch within the mark deſcribed by the glaſs, on every ſide, they are to be very gently watered, in order that the earth may adhere more cloſely to them, and thereby keep out the air; after this watering, they are to remain open, but not expoſed to a hot ſun, till their leaves become perfectly dry, after which the glaſs is to be placed over them carefully, on the ſame mark that was made by it upon the ſurface of the ſoil, before the pipings were placed there.

The bottom edges of the glaſs are to be forced a little into the earth, to prevent the admiſſion of too much air, which ſo far finiſhes the operation. What further remains to be done is to attend diligently to their management, with reſpect to ſun and air, &c. The ſoil ought to be kept regularly moiſt, till they have formed their fibres; but too much moiſture is as prejudicial as too little, and whenever they are watered, the glaſſes are never to be replaced over them till their leaves are perfectly dry. The pipings ſhould have a little of the morning ſun, but muſt be ſhaded from it when the heat becomes conſiderable; this will be eaſily effected, by placing mats upon a ſlight frame of hoops or laths erected over the bed, about two feet above it.

The glaſſes ſhould be occaſionally taken off to admit freſh air; if this material point is neglected, the conſequence will be a green moſſy appearance on the ſurface of the earth, and an univerſal mouldineſs amongſt the plants, which will deſtroy them.

It requires more ſkill to know when and how long the pipings ſhould be expoſed to the air, while forming root, than for almoſt any other part of the management; on this ſingle point, in great meaſure, depends the good or ill ſucceſs of the whole undertaking.

The propagation of Carnations by piping is always precarious: five thouſand plants were piped one ſeaſon, of which not more than one hundred periſhed; whereas more than two thouſand were loſt of the ſame number the year following, with but very little variation in the management; nevertheleſs, ſome ſorts ſucceed much better by piping than laying, and make healthier plants: it requires attention and experience to diſtinguiſh ſuch ſorts from the reſt.

It is almoſt, or perhaps entirely, impoſſible to lay down any rules that will not be liable, as circumſtances may vary, to miſlead the inexperienced in the art of piping, much muſt depend on the diſcernment and prudence of the cultivator; there is no great danger to be apprehended from taking off the glaſſes for a few minutes, or half an hour, when it is cloudy, and the air rather warm and moiſt; but if no opportunities of this kind occur in due time, it ſhould be done early in the morning: and rather than to omit doing it entirely, it will be better to take the glaſſes off, if it is only for five minutes, turning them upſide down on the path, in order to air them, and replacing them again over the plants; even this will be of great ſervice, though not equal to a more effectual airing at favourable times, which, indeed, becomes more frequently neceſſary in proportion to the length of time the pipings have been upon the bed: but when once they begin to ſtrike fibre, they will ſoon ſpindle up and become extremely weak, if not carefully attended to, agreeable to the following directions, *viz.* when their fibres are formed, which the additional verdure and growth of the plants will demonſtrate, the glaſſes ſhould be placed over them very lightly, in order that more air may be admitted; and when they become tolerably well rooted, the glaſſes being no longer neceſſary, ſhould be entirely taken away: but it ſeldom happens that all the plants, under the ſame glaſs, ſtrike root together; ſome are generally a few days or a week forwarder than the reſt, as will be apparent by their ſuperior growth and verdure: ſuch ought to be carefully taken up and planted in ſmall pots, for winter preſervation, or they may be planted round the ſides of large Carnation pots, filled with the following compoſt, where they will ſoon make rapid progreſs; the remaining plants which are not ſufficiently rooted for removal, muſt be continued under the glaſſes, as before directed, till they become ſo.

Small Auricula pots are well adapted for the reception and preſervation of Carnation layers and pipings, during autumn and winter: the addition of a little more loam and coarſe ſand to the compoſt, is recommended for thoſe ſeaſons.

Each pot ſhould contain at leaſt three or four plants, and be placed under an arch of hoops, where they can be covered with mats, in caſe of exceſſive rains, till the ſeverity of the weather renders it neceſſary to remove them into their winter repoſitory, which is to be conſtructed in the ſame manner, and have the ſame aſpect as that deſcribed for Auriculas.

When the layers are properly rooted, which will be the caſe with moſt ſorts in about three weeks or a month after laying, provided due care be taken to keep them regularly moiſt, and to ſhade them from the heat of the meridian ſun: they are then to be cut off from the old plant, with about half an inch of the ſtalk, which connects them to it, and be immediately planted in the manner before deſcribed.

Carnations are to be treated during winter much like Auriculas; with reſpect to the weather, they are ſeldom injured by a moderate dry froſt, though it is ſafer to defend them from too much of it: but it is very neceſſary to caution againſt covering them up cloſe when the plants are wet, as they are, in that ſtate, very liable to contract a deſtructive mildew, if they have not the benefit of a free circulation of air; this mildew makes its firſt appearance in purple ſpots on the foliage, which can only be cured or prevented from ſpreading amongſt the adjacent plants, by cutting out the infected part, or removing the pot, as ſoon as diſcovered, it being not improbable but that the diſtemper is, in great meaſure, owing to a very minute inſect, brought into exiſtence by the fermentive warmth generated at ſuch times. Plants thus infected have been frequently known to communicate the contagion to others which ſtand near them, therefore no time ſhould be loſt in cutting off the ſpotted leaves, or removing the plants to a diſtant part of the garden.

A repoſitory, conſtructed in the manner already deſcribed, is leſs liable to the above effects than any cloſe frame or ſituation can poſſibly be, becauſe it has the advantage of a free circulation of air at all times, even when ſhut up, unleſs indeed when cloſely covered up with mats, &c. as in caſes of ſevere froſt; but at ſuch times no ſuch conſequences are to be dreaded.

The rains of autumn and winter are generally more than ſufficient for Carnations, as well as for Auriculas, from an exceſs of which it is proper to defend them: of the two extremes, it is ſafer to keep them rather too dry than too wet, at theſe ſeaſons, eſpecially during winter; but a moderate degree of moiſture is always to be preferred, except when the weather is ſeverely froſty. As too long a deprivation of light is at all times prejudicial to plants, therefore, whenever the winter repoſitory is required to be cloſely covered up with mats, for ſeveral days and nights, with little intermiſſion, no opportunity ſhould be loſt during the middle of the day, if the ſun ſhines, to take off the mats in front of the glaſſes, in order to admit its light and warmth.

Whenever the ſurface of the earth in the pots becomes green with moſs, or too compact and adheſive, it will be proper to ſtir it up carefully, about half an inch deep, and to ſprinkle a little coarſe dry ſand regularly upon it: this will prevent any great degree of tenacity in future, and be of great ſervice; it may be repeated as often as required.

In ſpring, the pots will probably require to be frequently watered, and by the middle of March the operation of potting is to commence, as already deſcribed. The bloſſoms of Carnations, particularly the high coloured ſorts, are very apt to run from their ſtriped or variegated colours to a plain one; they are then eſteemed of little or no value: but when they are only partially run, they may ſometimes be recovered to their former ſtate, by being planted in a poor, dry ſoil, that will but juſt afford ſufficient nouriſhment for their exiſtence.

It is neceſſary to be very careful to mark ſuch pipings as are taken off before it can be aſcertained whether the original plant is in true colours, or run, becauſe it very ſeldom happens that the pipings, or layers, taken from a run flower, produce any other than run or plain-coloured bloſſoms; in conſequence of which they are not worth the trouble of propagation: the pipings ought therefore to be ſo marked as that it may be accurately known from what plant or plants they were taken, in order that if any of the originals ſhould prove foul in colour, or run, the increaſe of ſuch may be diſtinguiſhed from the reſt, and deſtroyed. The layers and pipings of the moſt beautifully variegated flowers will frequently produce run bloſſoms; but it is impoſſible to prevent it, eſpecially amongſt the rich high coloured ſorts, when they grow in a rich compoſt.

Some people pipe their Carnations at the third joint, but it is better to do it at the ſecond; becauſe, in the firſt inſtance, the third joint being more hard and woody, the pipings do not ſtrike root ſo ſoon, or form afterwards, ſuch handſome plants as when they are piped at the ſecond joint from the extremity of the ſhoot.

New ſorts of Carnations are obtained from ſeed, which ſhould be procured and raiſed in the following manner.

Thoſe flowers which have but few petals, or, as it is more commonly expreſſed, are thin of leaf, generally produce moſt ſeed, and therefore are moſt to be depended on for a ſupply; but they ſhould be poſſeſſed of the beſt properties in other reſpects, *viz.* their petals ſhould be large, broad, ſubſtantial, and perfectly entire at the edge, and their colours rich, and regularly diſtributed, and in due proportion, throughout the whole bloſſom.

The plants intended for ſeed ſhould be ſelected from the reſt, and their pots ſhould ſtand upon a ſtage, defended againſt earwigs, in an open part of the garden, in which ſituation they ſhould remain during bloom, and until the ſeed is perfectly matured: their bloſſoms ſhould be defended from rain, by having glaſs, paper, or tin covers ſuſpended over them, in ſuch manner as to admit a free circulation of air; the pots ſhould neither be kept very wet or very dry, nor will it be proper to cut and mutilate the plants, either for their layers or pipings, till the ſeed becomes ripe, becauſe it would certainly weaken them, and conſequently injure, if not deſtroy, their ſeed.

When the bloom is over, and the petals become withered and dry, they ſhould be carefully drawn out of the pod or calyx, being apt to retain a degree of moiſture at their baſe, endangering a mouldineſs, and decay in that part, which will deſtroy the ſeed.

There is another mode of treatment adopted ſucceſsfully in ripening the ſeed, which is, when the bloom is over, and the petals begin to decay, they are to be extracted as above, taking particular care to leave the two ſtyles, which appear like horns proceeding from the ſummit of the germen, or future pericarpium; the calyx is then to be ſhortened to about one half of its original length, and an aperture made on one ſide of the remainder, down to the baſe of the pericarpium, ſo that no water can poſſibly lodge there; but in doing this, great care is neceſſary not to wound or injure the pericarpium, or ſeed veſſel itſelf, becauſe it might prove deſtructive to the ſeed.

After the above is performed, the covers may remain, or be taken away at pleaſure; but in the latter caſe it is adviſable to looſen the upper part of the ſtems from the ſticks, that the open end of the calyx may incline a little downwards, the more effectually to preſerve it in a dry ſtate: the ſtems ſhould not be ſuffered to hang ſo looſe as to be in danger of breaking off with every puff of wind.

It is rather difficult to obtain any conſiderable quantity of fine Carnation ſeed, from a moderate collection of plants: which thoſe who make the attempt will often find to be the caſe.

The ſeed ripens from the end of Auguſt to the beginning of October: the pericarpium becomes brown, dry, and hard, and the ſeed, when ripe, is of a black, or very dark brown colour;

thoſe who are not ſufficiently attentive to the ripening of their ſeed, are apt to gather it too ſoon, before it is perfectly matured, in conſequence of which, the greateſt part proves ſmall, pale coloured, and unproductive.

Thoſe plants which have ſtood three or four weeks upon the ſtage, under the cloth covering, whilſt in bloom, ſeldom produce any ſeed at all, or but very little: neither do ſuch as are entirely expoſed to the weather; becauſe in this caſe the rains and night dews that occaſionally happen, keep the baſes of the petals, ſurrounding the pericarpium, continually moiſt; the conſequences of which are a mouldineſs and decay.

The ſeed, when gathered, ſhould remain in the pericarpium, in a dry room, till the beginning or middle of May; it is then to be ſown in pots, filled with the compoſt, and have a little fine mould ſifted upon it, barely ſufficient to cover the ſeed: at this ſeaſon of the year, artificial heat is not required, the pots ſhould therefore be placed in an airy part of the garden, be ſhaded from the heat of the ſun, and kept moderately moiſt, but never very wet. As ſoon as the young plants appear with ſix leaves, and become about three inches high, they ſhould be planted out on a bed of good rich garden mould, at about ten or twelve inches aſunder, and be defended from exceſs of rain, and ſevere froſts, by mats on hoops, placed over the bed in the uſual manner: they will in general blow the following ſummer.

Some perſons have advanced an opinion, that the ſeed of run plants produces as great a proportion of variegated flowers as any other; but the validity of this aſſertion has not yet been ſufficiently demonſtrated by experiment.

A Deſcription of the Properties of a fine Variegated Double CARNATION.

THE ſtem ſhould be ſtrong, tall, and ſtraight; not leſs than thirty, or more than forty-five inches high; the footſtalks, ſupporting the flowers, ſhould be ſtrong, elaſtic, and of a proportionate length.

The flower, or corolla, ſhould be at leaſt three inches in diameter, conſiſting of a great number of large well-formed petals; but neither ſo many as to give it too full and crowded an appearance, nor ſo few as to make it appear too thin and empty.

The petals ſhould be long, broad, and ſubſtantial, particularly thoſe of the lower or outer circle, commonly called the guard leaves; theſe ſhould riſe perpendicularly, about half an inch above the calyx, and then turn off gracefully, in a horizontal direction, ſupporting the interior petals, and altogether forming a convex, and nearly hemiſpherical corolla.

The interior petals ſhould rather decreaſe in ſize, as they approach the centre of the flower, which ſhould be well filled with them.

The petals ſhould be regularly diſpoſed alike on every ſide, imbricating each other in ſuch a manner as that both their reſpective and united beauties may captivate the eye at the ſame inſtant: they ſhould be nearly flat, however, a ſmall degree of concavity, or inflection, at the lamina, or broad end, is allowable; but their edges ſhould be perfectly entire, that is to ſay, free from notch, fringe, or indenture.

The calyx ſhould be at leaſt one inch in length, terminating with broad points, ſufficiently ſtrong to hold the narrow baſes of the petals, in a cloſe and circular body.

Whatever colours the flower may be poſſeſſed of, they ſhould be perfectly diſtinct, and diſpoſed in long regular ſtripes, broadeſt at the edge of the lamina, and gradually becoming narrower as they approach the unguis, or baſe of the petal, there terminating in a fine point. Each petal ſhould have a due proportion of white, *i. e.* one half, or nearly ſo, which ſhould be perfectly clear, and free from ſpots.

Bizards, or ſuch as contain two colours upon a white ground, are eſteemed rather preferable to flakes, which have but one, eſpecially when their colours are remarkably rich, and very regularly diſtributed.

Scarlet, purple, and pink, are the three colours moſt predominant in the Carnation; the two firſt are ſeldom to be met with in the ſame flower, but the two laſt are very frequently.

When the ſcarlet predominates, and is united with a paler colour, or, as it ſometimes happens, with a very deep purple upon a white ground, it conſtitutes a ſcarlet bizard, of which there are many ſhades and varieties, ſome richer, and others paler in their colours, as is the caſe with all the reſt.

Pink Bizards, are ſo called when the pink abounds. Purple Bizards, when the purple abounds. Crimſon Bizards, conſiſt of a deep purple and rich pink.

When the pink flake is very high in colour, it is diſtinguiſhed by the appellation of roſe flake; but ſome there are ſo nearly in the medium betwixt a pink and ſcarlet, that it can ſcarcely be defined to which claſs they belong.

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ON PINKS.

THE culture of the Pinks is much leſs difficult than that of Carnations: they are hardier, more eaſily propagated, increaſe more abundantly, and are leſs liable to the caſualties incident to the latter.

A good freſh loamy ſoil, dug and comminuted about two feet deep, and manured with a ſtratum of cow-dung, two years old, mixed with an equal proportion of earth: this ſtratum to be about ſix inches thick, and placed five or ſix inches below the ſurface, is all the preparation or compoſt that appears neceſſary for this flower.

The bed ſhould be raiſed three or four inches above the ſurrounding paths, and its ſides may be ſupported with an edging of boards, to come up even with, or one inch higher than its ſurface; this laſt more for the ſake of neatneſs than any particular utility it will be of to the plants.

The plants intended for the principal bed for bloom, ſhould be placed upon it in Auguſt, or early in September, as they do not blow quite ſo well if removed later in the ſeaſon; they ſhould be planted at about the diſtance of nine inches from each other, and the bed ſhould be laid rather convex, or rounding, to throw off exceſs of rain; but will require no other covering than a very ſlight one in caſe of ſevere froſt.

The bed ſhould be kept free from weeds, and its ſurface ſtirred up a little if it inclines to bind, or, in other words, whenever it becomes too firm and adheſive.

Large ſtrong plants will put up numerous flower ſtems, but it is proper to thin them out, a month or ſix weeks before bloom; in doing which, the largeſt and ſtrongeſt ſhould be left, eſpecially the principal leading ſtem, which proceeds from the heart or centre of the plant, together with all its beſt pods: but no plant, however ſtrong, ſhould be permitted to bloom more than ten or twelve bloſſoms, nor weakly plants more than four or five. In order to obtain them large and well coloured, all the ſmall lateral pods ſhould be cut or pulled off, as they never produce any other than diminutive flowers, and at the ſame time rob the others of a certain part of their nouriſhment, which, of courſe, prevents their attaining the ſize and beauty they would otherwiſe arrive at.

The largeſt and moſt buſhy plants do not produce the fineſt flowers; they naturally put forth numerous ſmall ſtems, which their roots are not able to ſupport ſufficiently to produce large bloſſoms. Strong healthy plants, not too large, and conſiſting of a capital leading ſtem in the centre, with but little ſurrounding increaſe, are moſt proper to ſelect for the beſt bed: theſe will ſeldom put up more than one or two ſtems, which will, however, be very ſtrong, grow tall, and produce three or four bloſſoms, as large and fine as the ſort is capable of.

Thoſe pods that nearly at the time of blowing become much ſwelled, and appear in danger of burſting, ſhould be tied in in the ſame manner as directed for Carnations,

tions, under ſimilar circumſtances. Such ſorts of Pinks as are moſt inclined to burſt their pods, oftentimes produce larger and finer flowers than others which have ſmaller pods, becauſe the latter generally conſiſt of too few petals: it is, however, more deſirable to have their pods large and long, than too ſhort and round, as it is hardly poſſible to preſerve the latter from burſting, whereby the beautiful circular form which the flower ought to poſſeſs is loſt. When the calyx is ſo extremely ſhort that it muſt inevitably burſt, it is better to aſſiſt nature by what is called letting down the pod, that is, with a pen-knife to nick it down at the bottom of each of its indentures, as low as may be deemed neceſſary, in order to let out the petals regularly on every ſide, and preſerve the circular form of the bloſſom: for if it is left to nature, the calyx will burſt only on one ſide, and its petals will conſequently force their way through that aperture, and produce a looſe deformed flower; ſome kinds are poſſeſſed of ſuch weak and ſhort pods that the calyx will entirely burſt from top to bottom on one ſide, and open ſo very wide as to ſuffer almoſt all the petals to fall out, and hang down when they have been in bloom but a ſhort time; ſuch indeed hardly deſerve to be claſſed amongſt the beſt ſorts, let their properties in other reſpects be ever ſo deſirable. When the flower ſtems are grown ſufficiently long, they ſhould be ſupported with ſmall ſticks, or wires, as the fancy of the cultivator may direct; but theſe ought to be diſpoſed of in ſuch a manner as to allow the bloſſoms to expand and blow perfectly diſtinct from each other, that the whole may have an eaſy graceful appearance.

Thoſe who can beſtow ſufficient time and attention to their bloom of Pinks, may contribute greatly to the effect, by placing upon the calyx thin pieces of card,[z] or ſtiff paper, cut circular, and of a proper ſize to ſuit the bloſſom, with a hole in the centre, adapted to the ſize of the pod, and cut quite through from thence to the periphery, in order to admit the ſtem: theſe are to be placed cloſe underneath the guard leaves, ſo as to ſupport them horizontally, and will, when they extend juſt as far as the extreme points of the petals, give the bloſſom a very circular and pleaſing appearance; but they are apt to warp when long expoſed to the weather, eſpecially after being wet, and muſt either be taken off entirely, or exchanged for new ones, as they will no longer anſwer the intended purpoſe. Some kinds do not require any aſſiſtance of this ſort, but the greater part not having their guard leaves ſufficiently ſtrong at the baſe to ſupport themſelves in a horizontal poſition, are conſiderably improved by this little contrivance, which, perhaps, by the foregoing deſcription, will not be difficult to comprehend.

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[z] See Plate 6. Fig. 11.

At the time of bloom, which is towards the end of June, it is proper to defend the bed by a covering, or awning, ſomewhat ſimilar to that uſed for the bloom of Tulips and Carnations: they ſhould, in like manner, enjoy the advantage of light and air, and the ſoil ſhould be kept regularly moiſt by ſoft water, adminiſtered between the plants, carefully avoiding to wet the bloſſoms.

The eaſieſt and moſt approved method of propagating Pinks is by piping them exactly in the ſame manner as deſcribed for Carnations; they ſeldom fail to ſtrike ſufficient root in the courſe of a fortnight or three weeks to enable them to bear removal with ſafety: they may then be tranſplanted into an open part of the garden, on a bed of the common garden mould, freſh dug up, where it will, in a few weeks, be eaſily diſcernible which are the moſt proper to place on the beſt bed for bloom. The time to pipe Pinks is immediately previous to, or during the bloom, or, indeed, as ſoon as ever the new ſhoots are grown of a ſufficient length for that purpoſe.

New ſorts of Pinks are procured from ſeed, and thoſe plants produce moſt ſeed which have been expoſed to the weather, except in caſe of very heavy rains, from which it will be proper to ſhelter them, both before and after bloom. Such ſorts produce the greateſt quantity of ſeed as have long narow pods, the bloſſoms of which conſiſt of but few petals; but the ſeed of ſuch will not be likely to produce ſuch large and double flowers as that which is ſaved from ſorts poſſeſſing ſuperior properties: it is to be gathered, preſerved, ſown, and treated in all reſpects like that of Carnations.

A Deſcription of the Properties of a fine Double PINK.

THE ſtem ſhould be ſtrong, elaſtic, and erect, and not leſs than twelve inches high.

The calyx rather ſmaller and ſhorter, but nearly ſimilar in form and proportion to that of a Carnation, as well as the formation of the flower, which ſhould not be leſs than two inches and a half in diameter.

The petals ſhould be large, broad, and ſubſtantial, and have very fine fringed or ſerrated edges, free from large coarſe deep notches or indentures; in ſhort, they approach neareſt to perfection when the fringe on the edge is ſo fine as ſcarcely to be diſcernible: but it would be conſidered a very deſirable object to obtain them perfectly roſe-leaved, *i. e.* without any fringe at all.

The broadeſt part of the lamina, or broad end of the petals, ſhould be perfectly white and diſtinct from the eye, unleſs it be ornamented by a continuation of the colour of the eye round it,[a] bold, clean, and diſtinct, leaving a conſiderable proportion of white in the centre, perfectly free from any tinge or ſpot.

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[a] When the corolla conſiſts of petals of this deſcription, it is denominated a Laced Pink.

The eye ſhould conſiſt of a bright or dark rich crimſon, or purple, reſembling velvet: but the nearer it approaches to black, the more it is eſteemed; its proportion ſhould be about equal to that of the white, that it may neither appear too large nor too ſmall.

On POLYANTHUSES.

POLYANTHUSES blow at the ſame time, and require nearly the ſame treatment as Auriculas, both with reſpect to ſoil and ſituation; they are, however, more impatient of heat and drought, and partial to the reverſe, *viz.* ſhade and moiſture: they may be grown in the ſame ſized pots, and in the ſame compoſt as the latter, with the addition of more loam; or they may, with equal propriety, be planted on cool and ſhady beds or borders, being very hardy, and ſeldom periſh in the coldeſt and wetteſt ſeaſons: but during the heats of ſummer they are frequently deſtroyed, unleſs the neceſſary precautions be taken.

Polyanthuſes are very liable to the depredations of ſnails and ſlugs, which infeſt their leaves and bloſſoms in the ſpring of the year; in order to extirpate theſe vermin, it is neceſſary to examine the plants and pots on all ſides, as early in the morning as poſſible, otherwiſe the opportunity might be loſt, becauſe they go in queſt of food at night, and conceal themſelves as the day advances, and as the light becomes diſagreeable to them, in ſuch a manner as not to be diſcovered without difficulty. But the worſt enemy to the Polyanthus is a ſmall red or ſcarlet ſpider, which in ſummer forms its web on the under ſide of the leaves: it is ſcarcely diſcernible to the naked eye, but may eaſily be perceived, if it exiſts, by means of a lens, or magnifying glaſs.

Theſe ſpiders probably ſubſiſt on the juices of the plant; it is, however, evident that they cauſe its leaves to become yellow and ſpotted, and eventually deſtroy it; they multiply with ſuch aſtoniſhing rapidity as to take poſſeſſion of a whole collection, in a very ſhort ſpace of time, if the neceſſary precautions be not taken as ſoon as any plant puts on the appearance of infection.

This inſect ſeldom attacks ſuch plants as are in a ſtate of vigour, or when the weather is cold and wet; it generally commences its depredations in the early part of ſummer, and continues them as long as the heat and dryneſs of the weather favour its exiſtence: the juices alſo of the plants being then more viſcous and ſaccharine, afford it more ſuitable nouriſhment than at any other ſeaſon.

Such plants as appear infected ſhould be immediately ſelected from the reſt, taken out of the earth, and ſoaked for two or three hours in a ſtrong infuſion of tobacco water, and be replanted in a freſh ſoil or compoſt, and removed to another ſituation remote from the former.

If the whole bed or border of Polyanthuſes is overrun with this inſect, it is beſt to take up all the plants, ſerve them in the ſame manner, and plant them elſewhere.

The bed, or border, from whence the plants have been taken, ſhould be immediately dug up, or trenched, and ſuffered to remain fallow till the following ſeaſon, or be occupied with ſome different crop, not liable to the ſame calamity.

Polyanthuſes are propagated by ſeparating their ſlips or offsets; this may be performed when the plants are freſh potted, at the ſame time and much in a ſimilar manner as deſcribed for Auriculas, or it may be done early in the ſpring; but in this laſt caſe the ſucceeding bloom will be in ſome degree injured.

The pots, when the flowers are in bloom, may ſtand in front of the Hyacinth bed, or at one end or in front of the Auricula ſtage, as fancy may dictate; but when ſeed is the object, the plants ſhould be expoſed to the weather, in a cool and ſhady ſituation, and be carefully watered as often as required, in the ſame manner as directed for Auriculas. The plants are materially injured and weakened by being permitted to bear ſeed, and frequently periſh in conſequence of it.

The pericarpium, or ſeed-veſſel, wil begin to open when the ſeed becomes mature, and fit to gather; and unleſs it is particularly attended to at this time, it will be in danger of falling out, eſpecially if it happens to be windy weather.

The ſeed when ripe will appear of a very dark brown colour: it ſhould be cut off, with part of the ſtem, and may afterwards be preſerved, ſown, and treated in every reſpect like that of Auriculas.

A Deſcription of the Properties of a fine POLYANTHUS.

ITS properties are in moſt reſpects ſimilar to thoſe of a fine Auricula, *viz.* the ſtem, peduncles, or foot-ſtalks, and formation of the bunch or truſs; therefore a definition of its pips, or petals, only remain neceſſary to be conſidered in this place.

The tube of the corolla above the calyx, ſhould be ſhort, well filled with the anthers or ſummits of the ſtamins, and terminate fluted, rather above the eye.

The eye ſhould be round, of a bright clear yellow, and diſtinct from the ground colour; the proportion as in the Auricula, throughout the flower.

The ground colour is moſt admired when ſhaded with a light and dark rich crimſon, reſembling velvet, with one mark or ſtripe in the centre of each diviſion of the limb, bold and diſtinct from the edging down to the eye, where it ſhould terminate in a fine point.

The pips ſhould be large, quite flat, and as round as may be, conſiſtent with their peculiar beautiful figure, which is circular, excepting thoſe ſmall indentures between each diviſion of the limb, which divide it into five or ſix heart-like ſegments.

The edging ſhould reſemble a bright gold lace, bold, clear, and diſtinct, and ſo nearly of the ſame colour as the eye and ſtripes as ſcarcely to be diſtinguiſhed: in ſhort, the Polyanthus ſhould poſſeſs a graceful elegance of form, a richneſs of colouring, and ſymmetry of parts, not to be found united in any other flower.

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A

SUPPLEMENTARY DISSERTATION

ON

SOILS, MANURES, &c.

SOILS, in general, are found to conſiſt of the following ſubſtances, *viz.*

Clay,
Sand,
Gravel or ſtones,
Calcareous and abſorbent earths,
Vegetable ſubſtances, containing oil,
Metallic ſubſtances, and
Salts.

Clay is a ſoft fine powder, on the application of water it becomes tenacious, and hardens, as it dries, into a compact ſolid maſs; if the ſoil abounds with clay, it will retain water in too great a degree, which will rot the fibres of plants; it will be too adheſive to permit their fibres to paſs freely into it, and will be difficult to ſeparate or work; the addition of ſand, dung, or good marle, will obviate theſe effects, and render it of a proper conſiſtence.

Sand conſiſts of ſmall cryſtalline particles, and has a contrary effect to clay in any ſoil where it abounds, permitting water to paſs too freely through it; the addition of clay, neat's-dung, or woollen rags, will give it adheſiveneſs and tenacity, and render it more fertile.

Sea, or river, ſand, is to be preferred to that found in ſtrata, or beds, in the earth, being more free from mineral or metallic ſubſtances, which are pernicious to vegetation.

Gravel, or ſtones, are larger maſſes of cryſtalline ſubſtances; they give the ſoil an open texture, and encourage the progreſs of the fibres of plants, when in due proportion, and not too large; they are particularly beneficial to a heavy moiſt ſoil, permitting the water to paſs away more freely: on the ſurface of a light dry ſoil they tend to prevent too copious an exhalation, and thereby render it more fertile.

Calcareous and abſorbent earths are, quick lime, limeſtone, chalk, ſhells, marle, &c.

Quick lime, or cauſtic calcareous earth, reſiſts putrefaction, it attracts acids and oils, and deſtroys both animal and vegetable ſubſtances, particularly the former: it is produced by burning limeſtone, chalk, ſhells, &c. with a red heat, till the aërial acid be diſcharged; it then becomes cauſtic: when perfectly burned, it diſſolves in water, in the proportion of five grains to a pint, and on being expoſed a ſufficient time to the air, it recovers its acid, and reverts to the ſtate it was in before burning, *i. e.* it becomes mild or effete: in this ſtate it has the property of promoting putrefaction, and is inſoluble in water, as are the other mild calcareous earths; but like them it effervеſces and combines with acids, thereby forming a neutral ſalt; and this ſalt, when united with oily ſubſtances, conſtitutes a kind of ſaponaceous mucilage, which, in a perfect ſtate, is the proper nutriment of plants. Calcareous earths, when reduced to a powder, and laid on the ſurface of the ſoil, are ſoon waſhed down by rains, and their effects loſt.

Marle, of all ſorts, is compoſed of calcareous earth mixed with clay: it is friable in water, and efferveſces with acids, which diſtinguiſhes it from ſimple clay.

Vegetable ſubſtances are found on and near the ſurface of moſt ſoils; they conſiſt of the roots and fibres of plants, and of plants that have grown, fallen, and decayed there; they contain only particles, which give the ſoil a black or dark coloured appearance, and greatly enrich it, unleſs the plants happened to be of the acetoſe, aſtringent, and antiputreſcent kind.

Vegetable ſubſtances paſs through the ſaccharine, vinous, and acetous fermentations, before putrefaction is completed, and their conſtituent parts ſeparated.

Metallic, or mineral ſubſtances, are frequently found in ſoils united with an acid; they are extremely pernicious and poiſonous to plants, and, where they abound in any great degree, render the ſoil barren and unproductive.

Salts are generally allowed to be the grand fertilizers of earth; therefore the ſoil is denominated rich, where they are of a proper quality and abound, and poor when they are abſent.

There are two families, or genera, of ſalts, the one alkaline, and the other acid, each of which are divided into their reſpective ſpecies, according to their ſubordinate powers.

The ſtrongeſt acid ſalts are,

1ſt. Vitriolic acid.
2d. Nitrous acid.
3d. Muriatic acid.

The ſtrongeſt alkaline ſalts are,

1ſt. Fixed vegetable alkali.
2d. Cauſtic calcareous earth.
3d. Cauſtic volatile alkali.

In the above arrangement, the moſt powerful attractors are placed firſt, and the reſt in their proper order: if any of the acids be mixed in due proportion with any of the alkali's, and diſſolved in water, they will combine and reciprocally naturalize each other; again, if cauſtic volatile alkali be united with any acid, fixed vegetable alkali, on being added to the ſolution, will take poſſeſſion of the acid, and drive off the volatile alkali; or if calcareous earth be united with an acid, on the application of fixed vegetable alkali to the ſolution, the acid and alkali will unite, and the earth will be ſeparated, and precipitate or fall to the bottom.

Alkaline ſalts appear to contain the baſis, or matrix, of the nutritive matter proper for plants; they attract the nitrous acid of the air, which is ſuppoſed to be the only ſpecies of acid that can anſwer the grand purpoſes of vegetation; they become reciprocally neutralized with it, but are ſtill capable of uniting and incorporating with the oleaginous particles of the earth, and by the addition of air and water, become attenuated, concocted, and matured, forming altogether the ſaponaceous mucilage, which is allowed to be the eſſential pabulum, or nutriment of plants.

From theſe facts, it may be eaſily deduced, that no ſubſtance ought to be eſteemed eligible as a manure, which does not contain ſome proportion of alkaline ſalts.

All animal, and ſome vegetable ſubſtances, afford volatile alkaline ſalts and oil, in a greater or ſmaller degree; and as dung, which is eaſy to procure, partakes of all theſe qualities, ſo is it principally recommended to the cultivator of tender plants, as preferable to any other kind of manure for general uſe: it nevertheleſs requires proper management to bring it into a fit ſtate for application, and muſt not be made uſe of before it has had ſufficient time to paſs, in ſome degree, through its various ſtages of putrefaction, and till it has reaped the advantages ariſing from a due expoſure to the atmoſphere.

Neats-dung[b] is eſteemed the beſt manure for hot, dry ſoils; it retains moiſture longer, and in greater quantity, than other dungs, ferments and putrifies more ſlowly, and is beſt adapted to the nature of all ſuch plants as are natives of a cold climate. The dung of hogs has nearly the ſame properties.

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[b] Dung of cows, oxen, &c.

The dung of pigeons and other fowls, as alſo that of horſes, ſheep, and deer, &c. is moſt eligible for cold wet ſoils, and for the culture of ſuch plants as are natives of a warm climate; theſe go through the different ſtages of putrefaction much ſooner than the former, and neither retain moiſture ſo long, or in ſo great degree as the firſt-mentioned.

In order to reduce freſh cow-dung to a proper conſiſtence for the cultivation of delicate plants, it ſhould be laid in a heap, not more than fifteen inches thick, in a ſituation neither low nor elevated, and be entirely expoſed to the influence of the atmoſphere: it ſhould be turned over and well worked, once in two months, that it may derive every poſſible benefit from the action of the ſun and air.

To prevent the loſs of any part of its enriching qualities, it is adviſable to place it upon a ſtratum of good mould, five or ſix inches thick; this will anſwer two good purpoſes: in the firſt place, the ſoil will receive the ſtrongly impregnated moiſture that naturally drains from the dung after rains, and which would, unleſs ſo preſerved, ſoak into the ground below, and be in great meaſure loſt; and ſecondly, if at each time of turning the dung, during ſummer, a little of this ſtratum be pared off, and laid upon the ſurface of the maſs, it will forward its putrefaction, and prevent its ſalts from volatilizing in ſo copious a degree as if its ſurface was expoſed to the heat of the ſun without ſuch a guard.

When it has been thus treated for twelve or fourteen months, it will become ſufficiently reduced to paſs through a coarſe ſkreen, or ſieve; this will be more eaſily performed during a ſeries of dry weather, becauſe its parts will ſeparate and paſs through it with leſs labour than when it is in a wet ſtate; after this laſt operation, it will make rapid progreſs towards a ſtate of maturity, and at the end of two years it may be ventured on as a ſafe and eligible manure for every purpoſe to which cow or neats dung is applicable.

The cow-dung produced near London is more crude and groſs than that of the country, occaſioned by the difference of food on which the animal ſubſiſts; it of courſe requires longer preparation and expoſure to the atmoſphere than the latter, but two years and a half will be found ſufficient for it in its groſſeſt and moſt crude ſtate.

Horſe-dung ſooner becomes fit for uſe than cow-dung; it ſhould be laid thicker in the heap, but in other reſpects have the ſame treatment as the latter, except that it will not require more than twelve or fourteen months to prepare it for any purpoſe.

Manures are valuable in proportion to the ſalts and oils they contain, and are to be applied in quantity according to their quality.

Hence it ariſes that the dung of pigeons ſhould be uſed in ſmaller proportion than that of horſes, becauſe it contains more volatile ſalts; and for the ſame reaſon, the aſhes of burnt vegetables, containing a conſiderable proportion of fixed alkaline ſalts, muſt be uſed more ſparingly than pigeons dung, being ſtill more powerful: for that which is very beneficial and highly proper in due proportion, or moderate quantity, becomes pernicious and dangerous in exceſs; therefore, all ſtrong manures ſhould be made uſe of with the utmoſt caution, or their effects may prove deſtructive.

As dungs are the moſt uſeful, ſafe, and eaſy to procure, of almoſt any kind of manure, it may not be improper to add a few remarks reſpecting the application of them, upon which, indeed, in great meaſure, ſucceſs ultimately depends, *viz.*

Dungs ſhould never be expoſed, during ſummer, too thin on the ſurface, becauſe the full action of the ſun and air upon them, in that ſtate, would volatilize their ſalts and oils, which would exhale and be loſt.

They may lay thinner, and be more expoſed to the atmoſphere during winter, becauſe the air is then more replete with the nitrous or aërial acid, which the ſalts of the dung attract in greater quantity by ſuch expoſure, and are thereby rendered more nutritive, and ſooner fit for uſe.

Dungs muſt never be buried too deep in the earth, beyond the action of the air, becauſe in ſuch a ſituation they will ſtagnate, corrupt, and become putrid, and poiſonous to plants.

In order to diſcover whether a ſoil contains any metallic or mineral acid ſalts, the following experiment is recommended, *viz.* Take a few pounds weight of the ſoil, at about twelve or fifteen inches below the ſurface, becauſe that of the ſurface ought not to be conſidered a fair ſpecimen, being ſubject to the influence of the atmoſphere, and waſhing of rains; put it into an earthen veſſel, and pour as much boiling hot rain, or diſtilled water, upon it, as will completely cover it; ſtir it well together, that the ſalts may be perfectly diſſolved, and let it ſtand till the earth ſubſides; filtre off a little of the water, through filtrating paper, into a glaſs or earthen veſſel, and add to it a few drops of a ſtrong ſolution of fixed vegetable alkali; this will immediately combine with, and neutralize the mineral acid, if there be any, and the earthy part will precipitate.

On adding a little of the infuſion of galls to the filtrated liquor, the quality of the acid may be aſcertained; if it contains iron, a blackiſh recrement will precipitate, or grey if it contains copper.

Some ſoils abound with metallic ſubſtances of the ferruginous kind, which make them appear of a ruſty iron colour; theſe ſubſtances are frequently found conſolidated with the ſoil, into large maſſes, very ponderous and adheſive: earth of this quality is commonly called Foxbent, or Till; it is extremely unfavourable to vegetation.

Upon calcining one of theſe maſſes, and reducing it to powder, if a magnet be applied, it will attract and ſeparate numerous particles of iron.

The beſt method of converting ſoils of the above deſcription to a ſtate of fertility is as follows:

Spread a ſufficient quantity of quick lime on the ſurface; let it have a conſiderable time to operate, and afterwards frequently turn up the ſoil and lime incorporated together, that the air may pervade it thoroughly; by this means its maſſes will be reduced, and their metallic properties deſtroyed; the ſoil will finally become productive.

If neutral ſalts abound in any ſoil, to ſo great a degree as to become noxious to vegetation, it may be known by the following experiment.

Boil the filtrated liquor, before deſcribed, till its aqueous parts are nearly evaporated; put the remainder into a glaſs or earthen veſſel, and let it ſtand to cool; if any neutral ſalts are contained in it, they will ſhoot into cryſtals.

Such ſoils will require long expoſure to the atmoſphere before they acquire fertility.

Fixed vegetable alkaline ſalts, and calcareous earths, ſhould never be placed at any conſiderable depth from the ſurface of the ſoil; their ſalts cannot exhale, but have a continual tendency to ſink downwards, which inclination being promoted by rains, the ſoil would conſequently ſoon loſe any benefit it might otherwiſe derive from them.

Alkaline ſalts, of all deſcriptions, in ſolution, change the purpliſh blue colour of the tincture of violets to a green;

but all the acid ſalts change it to a red: in order to prove it by experiment, take a narrow ſlip of white paper, dip it into the tincture, and, when dry, apply it to the ſolution, it will immediately diſcover, by its appearance, whether an acid or alkali prevails; if neither the one nor the other predominates, the colour of the ſtained paper will undergo no alteration; therefore, if the ſolution contains any ſalts at all, they are neutrals, *i. e.* conſiſting of equal proportions of alkali's and acids.

Of neutral ſalts there are many, but nitre is, perhaps, the moſt perfect, and is ſuppoſed to be the beſt adapted to all the purpoſes of vegetation.

The nitrous acid, according to the opinion of chymiſts, is always produced by the laſt ſtage of putrefaction; the tobacco plant, however, ſeems to exhibit ſome proof of its more univerſal exiſtence, which having come under the author's immediate obſervation, he takes the liberty ſimply to mention; at the ſame time moſt reſpectfully ſubmitting its conſideration to thoſe who may be better qualified to decide upon it. This plant, which is well known to be highly alkaleſcent, and, for the purity of its ſalts, preferable to moſt others, wherever it may have grown, if it be taken up at a proper time, while in a ſtate of vegetation, and dried in an open airy ſituation, defended from the heat of the ſun and rain, nitrous particles will be formed, and abound in the ſmall ſtalks and fibres of the leaves, before any conſiderable putrefaction can have taken place, to ſuch a degree as even to deflagrate with exploſion when the parts become heated red hot.

Vitriolic acid is found in the earth, united with various metallic and ſulphureous ſubſtances.

Muriatic acid is found in the earth, in mineral waters, the ſea, &c. it is the weakeſt of the mineral, but ſtronger than any vegetable acid: it is poiſonous to plants, as are all mineral or metallic ſubſtances whatſoever.

Sea ſalt is by ſome people uſed as a manure; it certainly contains ſome foſſil or mineral alkali, but it abounds with muriatic acid, and therefore cannot, by any means, be recommended as a ſafe and eligible manure, which the following experiment will tend in ſome meaſure to demonſtrate.

A quantity of ſea ſalt, in ſolution, was applied to part of a paſture field; the ſoil became, in conſequence, barren and unproductive for more than twenty years; it at length recovered its fertility, but did not afterwards appear to have derived any advantage from the experiment.

It is true, the marſhes, or low grounds near the ſea, and mouths of rivers, which are periodically inundated by ſalt water, afterwards produce herbage luxuriantly; but it does not ſeem neceſſary to conclude from that circumſtance, that the ſoil becomes enriched by the ſea ſalt: it may, indeed, receive conſiderable benefit from the animal and teſtaceous ſubſtances brought upon it by the water, and left on its ſurface when it ſubſides; but from the foregoing experiment, and the known properties of ſea ſalt, may it not be reaſonably preſumed, that the ſalt itſelf acts rather as a preſent poiſon, than as a future promoter of vegetation? The ſoil, indeed, evidently requires a conſiderable period of time, proportionate to that in which it has remained under the ſalt water, to recover even the ſame degree of fertility it poſſeſſed before the event happened; a much longer period than thoſe ſoils require which have been laid under water by exceſſive rains, or which have been overflowed by a ſoft, freſh water river, rendered ſtill richer at times of flood, by the fine earthy particles, ſalts, &c. waſhed from the ſurface of the adjacent lands, by the rains which have cauſed it to overflow its banks.

Some ſoap-makers waſte aſhes, containing a certain quantity of vegetable and calcareous alkali, were laid in a heap, on part of a poor field which had never produced any thing but heath, moſs, and other aſtringent and acetous plants; it remained there about a year, and its ſalts deſtroyed every plant near it: it was afterwards removed, but the earth on which it had been placed produced no plant for about a year ſubſequent to its removal, after which the ſoil became luxuriantly rich: nor were the advantages confined to the narrow limits occupied by the waſte aſhes; for in the courſe of a few years, all the adjacent parts of the field became enriched by the extended influence of the ſalts; the ſoil retained its fertility for more than thirty years, which by the end of that period became amazingly extenſive.

The ſuperficial earth of this field was of the peaty or moory kind, of a dark colour, and about ſix inches deep; underneath was an irony clay, the metallic acid of which had cauſed its poverty: but that property of the clay was controlled by the alkaline ſalts of the waſte, which at the ſame time attracted the nitrous acid of the air, and thereby rendered the ſoil fruitful; the operation of the ſalts became ſo conſiderably extenſive by the waſhing of rains, and the attraction of the acid in the ſoil.

Good marle would undoubtedly have produced conſequences nearly ſimilar to the above, but none could be conveniently procured; there can be no doubt that the ſoil on the ſurface contained oily particles in abundance, but the alkali's were wanting to form the ſaponaceous mucilage.

Fixed vegetable alkali is produced by incineration, or the burning of vegetables in the open air, till their acids and oils be diſcharged, or volatilized, and their aſhes become white, or nearly ſo. The ſalts thus produced are never pure, but conſiſt of different proportions of alkali's and neutrals, according to the nature of the plant, and the ſtate it is in when burned.

It is found by experience, that thoſe vegetables which afford plenty of good ſalts, if properly burned when in right ſeaſon, which is when the ſeed has attained its full ſize, but is not perfectly ripe, will not yield near the ſame quantity, nor of ſo good a quality, a few weeks earlier or later; there are alſo other circumſtances to be conſidered and attended to, which require cloſe obſervation, and conſiderable experience to underſtand and account for properly.

Much depends on the ſoil, air, climate, and ſituation in which the plants have grown, and the manner of conducting the operation.

It has been proved by repeated experiments, that the northern and weſtern coaſts of Great-Britain furniſh plants more ſtrongly alkaleſcent than the ſouthern and eaſtern coaſts: this phænomenon appears to be an object worthy of philoſophical inveſtigation.

It is obſerved by chymiſts, that the cauſticity of ſalts depends on the abſence of fixed air; which perhaps might be more intelligibly denominated the nitrous or aërial acid, becauſe it is reaſonable to conclude, that the acid being, when heated, exceedingly more volatile than the alkali, becomes expelled and driven off in the proceſs of incineration, and that until the alkali has recovered its acid, it remains in a ſtate of cauſticity; but upon a ſufficient expoſure to the atmoſphere, it will regain its acid, and become mild or effete; therefore it cannot be doubted that the abſence of the aërial acid is the ſole cauſe of cauſticity.

The calcareous ſalt of lime being added in ſufficient quantity to a ſaturated ſolution of fixed vegetable alkali, produces ſoap ley; the effects of the lime are, to produce a more perfect degree of cauſticity, and a greater inclination to unite with ſubſtantial oils, with which the ley intimately combines and forms altogether a viſcous glutinous ſubſtance, containing the baſis of the true mucilage; therefore ſoap and ſoap-ſuds certainly poſſeſs it in as perfect a ſtate as it can be prepared or produced by chymical proceſs. But notwithſtanding their excellence as manures, yet they are by no means proper for immediate application to delicate plants: it is true they enrich the ſoil, but until they have undergone putrefaction, and their ſalts have had ſufficient time to become neutralized by the acid of the air, they are abſolute poiſons to ſuch plants; hence the neceſſity of expoſing manures and compoſts for a ſufficient time, and in a proper manner, to the atmoſphere, that their crude acrid properties may be diſcharged, their ſalts neutralized, and that they may paſs through their various ſtages of putrefaction; in the courſe of which, and likewiſe after application, the nutritive matter they contain ſhould neither be loſt by too copious exhalations, nor ſuffered to ſtagnate and corrupt for want of the due action of the air, agreeable to the foregoing obſervations.

Many vegetable ſubſtances afford but a very ſmall proportion of fixed alkaline ſalts upon incineration; among which are the aſtringent plants of moraſſes, &c. and the ſaccharine tribe, of which the potatoe is a ſpecies: their ſalts are too volatile to bear the operation of burning without being exhaled and loſt; but if they be taken in a ſucculent ſtate, and laid in a heap, covered with three or four inches of earth, they will putrify, and what ſalts they contain will be preſerved to conſiderable advantage as a manure.

Animal ſubſtances produce volatile alkaline ſalts, and vegetable ſubſtances fixed alkaline ſalts; but neither fixed alkaline ſalts, nor acids, appear to be conſtituent parts of living animals, or if at all ſo, in extremely minute proportion.

The ſalts of urine appear to be of a peculiar kind, diſtinct from all others; they participate, in ſome degree, of the nature both of animal and vegetable ſalts; the ammoniacal abound in them in much the greateſt quantity, but they are found likewiſe to contain a ſpecies of tartarous ſalt, oil, and ſome ſulphur.

Urine is found to produce volatile alkaline ſalt in greater proportion, and to contain leſs of earthy matter than any other animal ſubſtance.

It is decompoſed by putrefaction, and ſhould never be applied to plants, till its ſalts become perfectly neutralized by very long expoſure to the atmoſphere.

All animal ſubſtances whatever, are excellent manures, when properly applied.

Sulphur conſiſts of pure inflammable matter,[c] combined with the vitriolic acid and earth; the laſt in very ſmall proportion: it is poiſonous to plants, as are all waters impregnated with it.

Oils conſiſt principally of inflammable matter; they are generally found combined with an acid, earth, and water, the three laſt in very ſmall proportion.

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[c] Or phlogiſton.

Oils are of various qualities; all animal and vegetable oils are great promoters of vegetation, they are inſoluble in water, without the mediation of alkaline ſalts, and but imperfectly ſo without the ſal-ſaponarius.

Animal and vegetable ſubſtances have a near affinity to each other, as appears by their reciprocal commutations.

Animals derive their ſuſtenance from vegetables, either immediately or ultimately, and when decompoſed by putrefaction, they become great promoters of vegetation.

Nightly dews are of the utmoſt conſequence to vegetation, eſpecially in hot climates, where they are probably the vehicles which convey the ſovereign, nitrous, or aërial acid, more directly to plants and to ſoils, and in greater quantity than they could otherwiſe poſſibly obtain it: in ſuch climates the very exiſtence of plants, in all probability, depends on them.

It is difficult to define what are the component parts of dew, or to inveſtigate its peculiar properties; there can however be no doubt, that it is produced principally by exhalations from the earth, which when condenſed by the cold air of the night, become ſpecifically heavier than the atmoſphere, and deſcend again to the earth, or upon any object they meet with.

The particles of dew certainly conſiſt principally of water; it is, however, probable that they contain a minute proportion of volatile alkali, attracting and uniting with the nitrous acid of the air, whereby they ſooner become condenſed and ſpecifically heavier than ſuch exhalations as aſcend higher in the atmoſphere, and return to the earth in the form of rain.

Rain and ſnow waters are ſoft, and contain a ſmall proportion of ſalts and oil: they putrify ſooner than ſpring or hard water, which is probably occaſioned by their containing more oil, and being free from any mineral or metallic acid.

Hard ſpring waters generally contain a mineral acid, which is extremely injurious to delicate plants; it hardens their fibres, and coagulates their juices in a great degree, and acts as a poiſon to ſuch.

Some waters are rendered hard by being impregnated with the nitrous acid: theſe contain a calcareous earthy baſe, by which the acid has been attracted; they are thereby rather improved than injured by their hardneſs: but ſuch are ſeldom found in any gravelly ſoil, or in ſuch as abounds with metallic ſubſtances.

A ſufficient expoſure of cold, hard, ſpring water, containing metallic ſubſtances, to the ſun in ſummer, cauſes it to be leſs chilling to the earth, renders it rather ſofter, and leſs pernicious to plants: if it be long expoſed, ſome of its pureſt particles will, of courſe, exhale ; but at the ſame time the mineral acid will alſo gradually fly off, which is the principal cauſe of its hardneſs; the metal will fall to the bottom, being ſeparated from its acid, and the water will conſequently become conſiderably improved by ſuc expoſure.

Snow is an excellent preſervative to plants againſt froſt, and, when not too deep, it admits light and air freely.

Froſt is as deſtructive to tender plants as it is beneficial to the ſoil; it acts principally on their fluids, which dilate and expand as they congeal, and ſhoot like ſalts, in the form of cryſtals; conſequently the parts of the plant replete with juices, burſt on freezing, and are deſtroyed,

Succulent plants are therefore more liable to injury from froſt, than ſuch as are of a more firm, hard, and woody texture.

Froſt has a ſimilar effect on the aqueous particles of the earth: on freezing it becomes more ſeparated, and capable of imbibing more copiouſly, the nitrous acid of the air, which abounds moſt in cold and froſty weather, particularly when the wind is northerly.

The beſt method of preparing ſoil for a compoſt is as follows, *viz.*

Take the turf, with its earth and fibres, about three or four inches thick, from the ſurface of a common, or old paſture field, where the ſoil is of a good quality, place it ſo as to form a wall, of about four or five feet in height, and two feet thick, on the top of which lay a ſtratum of calcareous earth, mixed with the aſhes of burnt vegetables; when it has remained in this ſtate two or three years, it will become in excellent condition, the ſalts placed on the ſurface will have deſcended into the maſs by rains, and it will be found at the end of that period replete with nutritive matter; the vegetable fibres, &c. with which it abounds, will be reduced into a more proper conſiſtence than could have taken place under any different mode of treatment.

It ſhould afterwards be paſſed through a coarſe ſkreen, or ſieve, ſix or eight months before it is wanted for uſe, that its parts may be more perfectly incorporated: it ſhould likewiſe be frequently turned over, that the action of the air upon it may preſerve it perfectly ſweet, and in good condition, either as an ingredient in a compoſt, or for whatever purpoſe in vegetation it may be intended.

Numerous are the compound and neutral ſalts found in various ſoils; but they are all combinations of ſome ſpecies of alkali's and acids, or of acids with earthy and metallic ſubſtances; it does not appear neceſſary to diſtinguiſh them here particularly by name, or to enter into a minute detail of their reſpective properties, as it is preſumed what has been already obſerved on the ſubject, will be ſufficient, without attempting to deſcribe all the poſſible attractions, combinations, and effects on vegetation, thoſe ſubſtances are capable of, which indeed, would amount to little more than a meer hypotheſis, unfounded on actual experiment.

The properties and qualities of different ſubſtances are apparently ſo extremely diſſimilar to each other, that it ſeems almoſt natural to conclude they are originally compoſed of different kinds of matter; but upon a juſt and mature reflection on the infinite power and wiſdom of the Creator, the idea vaniſhes, and it muſt be acknowledged, that one, pure, uncompounded element, or material, may have been abundantly ſufficient in his hand, to produce under different modifications, all the various phænomena of nature.

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PLATE 1.

Fig. 1.

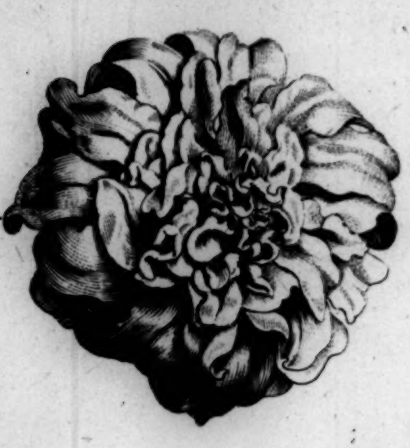
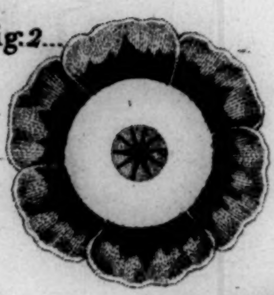


Fig. 2.



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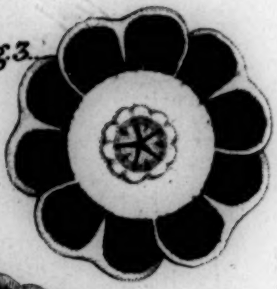

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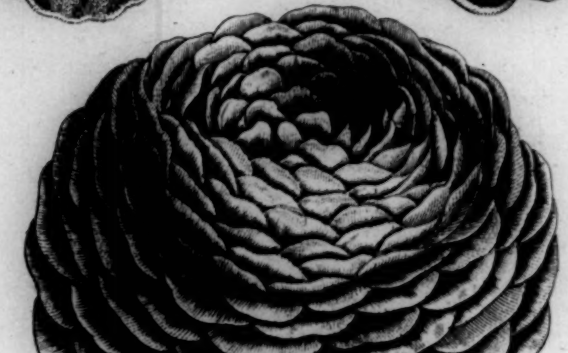

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PLATE 2.

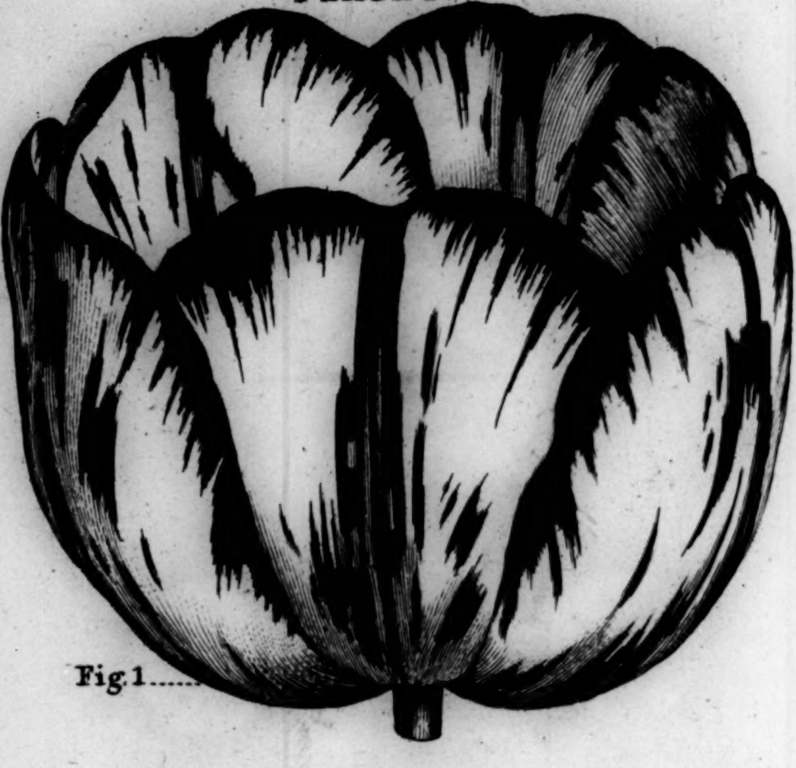

Fig. 1

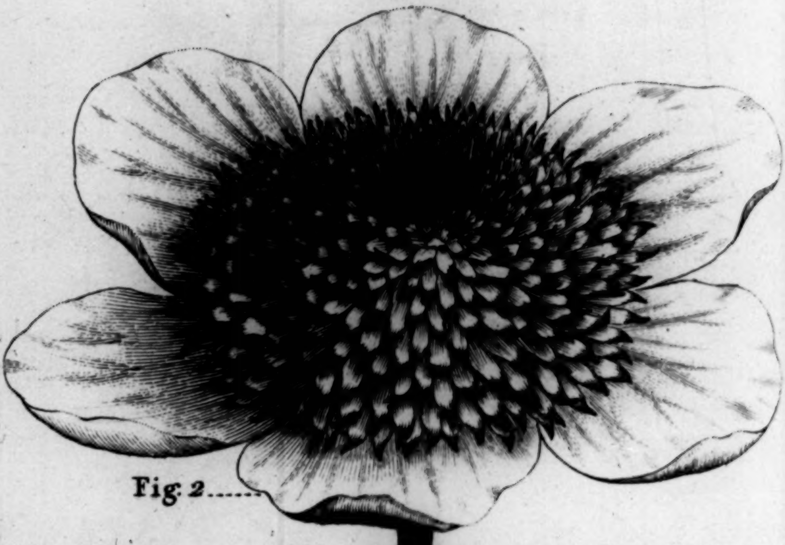

Fig. 2

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DESCRIPTION OF THE PLATES.

PLATE I.

Fig. 1. A Corolla, or bloſſom, of a fine double Hyacinth, of the common ſize. Vide page 44.

Fig. 2. Ditto of a fine variegated Auricula. Page 152.

Fig. 3. Ditto of a fine Polyanthus. Page 225.

Fig. 4. Ditto of a fine double Ranunculus. Page 90.

PLATE II.

Fig. 1. A corolla, or bloſſom, of a fine variegated Tulip, about two-thirds of the common ſize. Vide page 67, &c.

Fig. 2. Ditto of a fine double Anemone, of the common ſize. Page 101, &c.

PLATE

PLATE III.

Fig. 1. A corolla, or bloſſom, of a fine variegated double Carnation, of the common ſize. Vide page 202 and 203.

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Fig. 2. A Tulip, or bulbous tunicated root, ditto. Page 50, &c.

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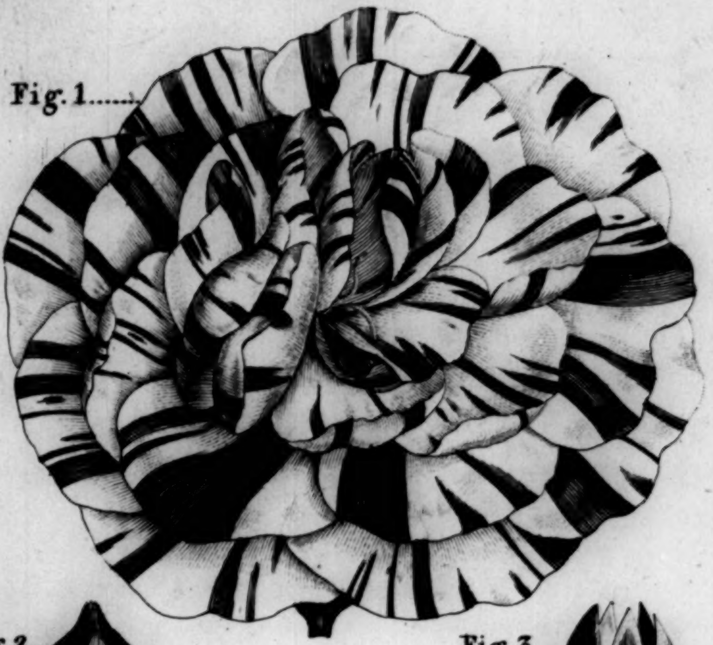
PLATE

PLATE 3.

Fig. 1.



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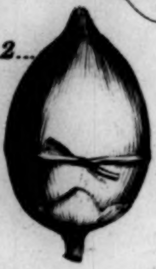

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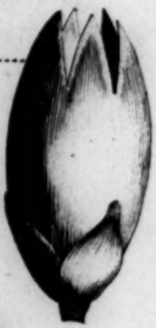

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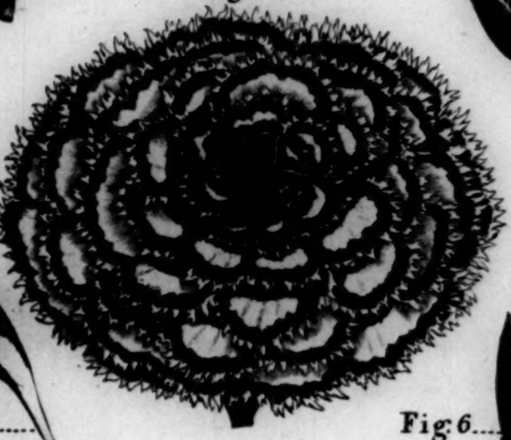

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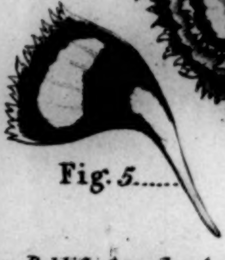

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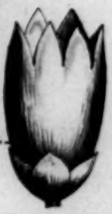

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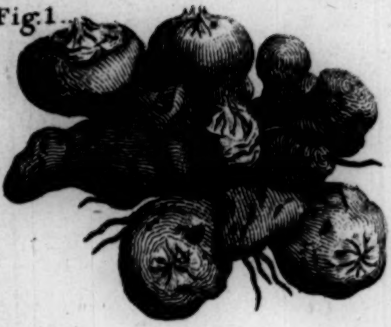
PLATE 4.

Fig. 1.



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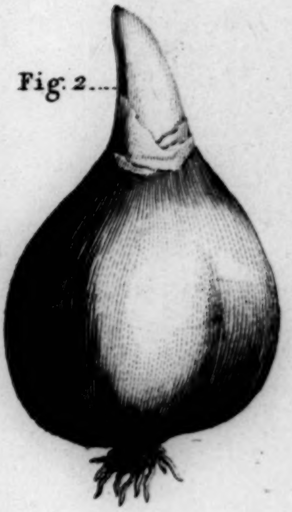

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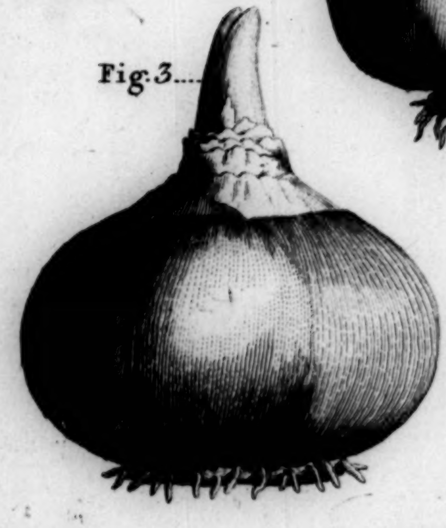

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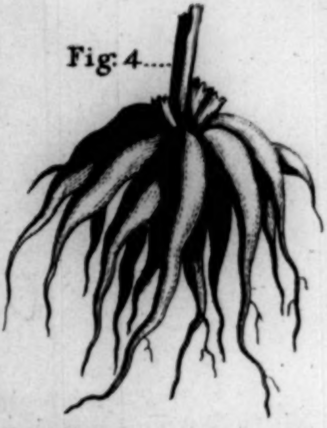

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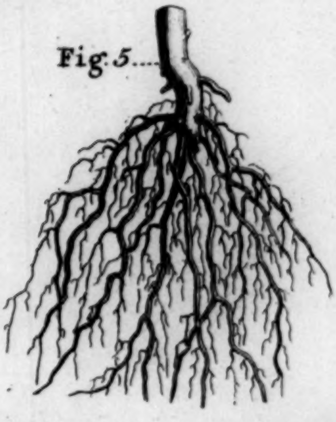

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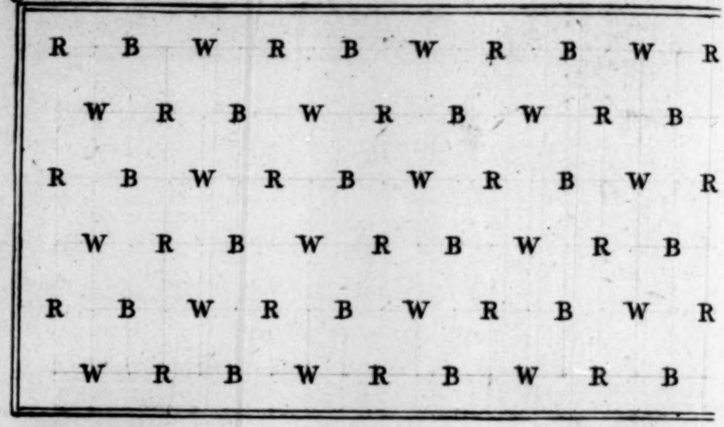
PLATE 5.

Fig. 1.



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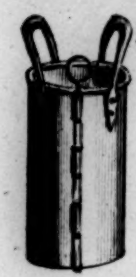

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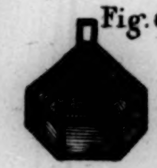

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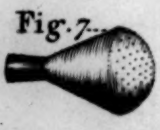

Fig. 8.

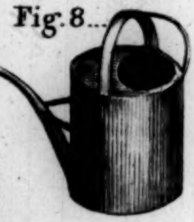

Fig. 2.

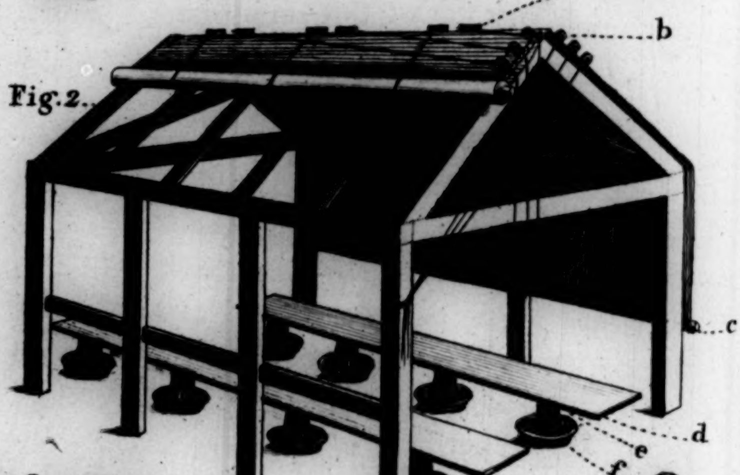

Fig. 3.

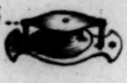

Fig. 4.

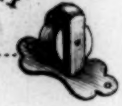

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PLATE V.

Fig. 1. A plan of the ſurface of the weſt-end of the Hyacinth bed, on a ſcale of half an inch to a foot, as deſcribed page 27 and 28.

Fig. 2. A perſpective view of a frame, or awning, to defend a bed, or ſtage of flowers, from the weather, with the cloth drawn up on one ſide. Page 32 and 33.

a, One of the horizontal pullies (ſee Fig. 3.) ſcrewed on the edge of the ridge-piece.

b, One of the perpendicular pullies (ſee Fig. 4.) ſcrewed on the edges of the end rafters.

c, One end of a long wooden roller, faſtened to the lower edges of the cloth, with which it is rolled up, or let down, by lines paſſing through the pullies.

d, One of the boards of the Carnation ſtage placed upon ſubſtantial ſupporters (as at e) the lower ends of which ſtand in reſervoirs of water (as at f). Page 165 and 166.

Fig. 3. One of the horizontal pullies (a, Fig. 2.) Page 32 and 165.

Fig. 4. One of the perpendicular ditto, (b, Fig. 2.) Page 32 and 165.

Fig. 5. A tranſplanting inſtrument, as deſcribed page 57 and 58.

Fig. 6. A ſmall hexagonal hand-glaſs. Page 123, 134, and 183.

Fig. 7. A roſe of a watering pot, deſcribed page 85 and 86.

Fig. 8. A ſmall watering pot for Auricula, &c. deſcribed page 129 and 130.

PLATE VI.

Fig. 1. A perſpective view of the eaſt-end of the winter repoſitory for Auriculas and Carnations; that for ſummer uſe differing only in having wooden ſhutters ſubſtituted for the frames of glaſs, on the ſouth ſide, deſcribed from page 123 to 131.

Fig. 2. A perſpective view of the eaſt-end of the Auricula ſtage, deſcribed page 135, &c.

Fig. 3. a, A fern peg; b, a wooden or bone ditto, for laying Carnations with, deſcribed page 175.

PLATE 6.

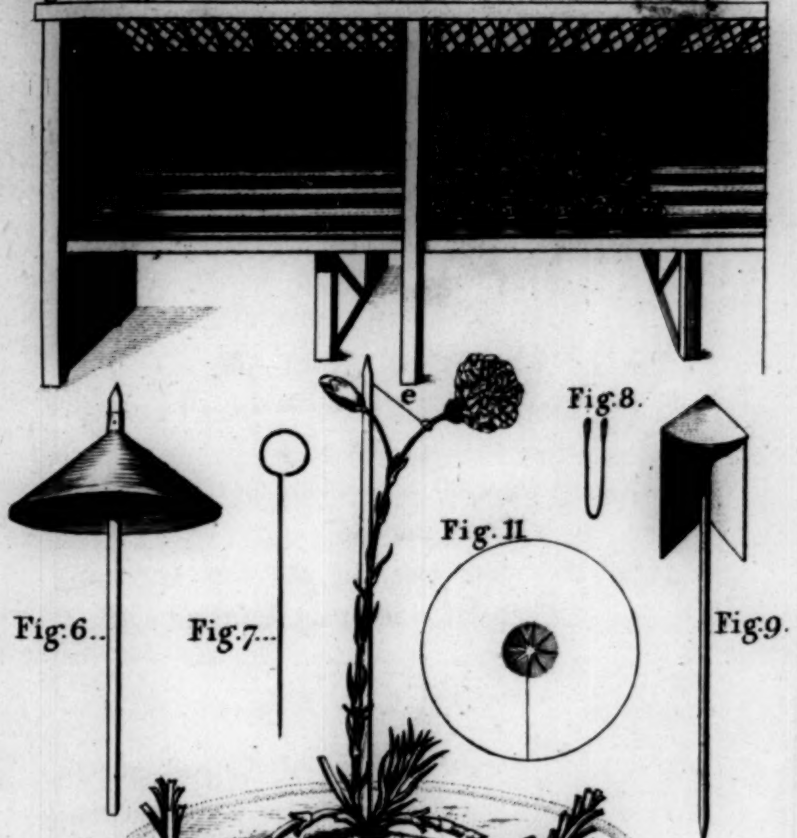
Fig. 2.
e
Fig. 8.
Fig. 11
Fig. 6..
Fig. 7...
Fig. 9.
c
d
Fig. 5.
Fig. 3.
a..
b..
Fig. 10.
Fig. 4.
Fig. 1.

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Fg. 4. One of the notched ſtakes, deſcribed page 124, &c.

Fig. 5. The ſurface of a Carnation pot, with its plant under the operation of laying, viz.

c, A layer, or ſhoot dreſſed, and the inciſion made, as deſcribed page 176, &c.

d, A layer pegged down, as deſcribed page 180, &c.

e, A flower ſtem held to its ſtick by one of the braſs wires (ſee Fig. 7.) deſcribed page 168, &c.

Fig. 6. One of the paper caps on its ſtick, as deſcribed page 164, &c.

Fig. 7. One of the ſmall elaſtic braſs wires, (e, Fig. 5.) Page 168, &c.

Fig. 8. A ſmall pair of wire nippers, to extract and adjuſt petals; the points of which are flattened, and bound with ſilk, or thread, to prevent injury. Page 169.

Fig. 9. A ſhade for the bloſſoms of Hyacinths, Tulips, &c. previous to the erection of the awning. Page 30 and 54.

Fig. 10. A Carnation, or Pink, piping, completely prepared. Page 181 and 182.

Fig. 11. One of the circular pieces of card, or ſtiff paper, for the bloſſoms of Pinks, as deſcribed page 213.

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